USAF Utilities Privatization Randolph Air Force Base, Texas

Feasibility Analysis Report



Prepared for AFCESA 139 Barnes Dr., Suite 1 Tyndall AFB, FL 32403-5319

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Limitations

During preparation of this report and its conclusions and opinions, certain assumptions have been made with respect to conditions that might occur in the future. Although these assumptions are considered reasonable for the purpose of this report, they depend on future events, and actual conditions might differ from those assumed. In addition, certain information has been provided by the Air Force and others. This information was not independently verified, and no assurances can be offered with respect to it. To the extent that actual future factors differ from those assumed herein or provided by others, the actual results will vary from those forecast.

This report also reflects current opinion on the legal and factual issues addressed, and it is based on current applicable legal authorities. Future court decisions, legislation, and other relevant developments, however, can change the law. Before applying this opinion in the future, therefore, it is essential to determine whether the law has changed in any respect that would necessitate a revision of the opinion expressed. This opinion is supplied solely for Air Force information and use in connection with the matters directly addressed in this report. The opinions herein are limited to the matters expressly stated. No opinion is implied, and none should be inferred, beyond the opinions expressly stated.

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Executive Summary

Report Purpose

The purpose of this report is to determine whether privatization of the utility systems at Randolph Air Force Base (AFB), Texas, is feasible based on risk, regulatory, market, and economic considerations.

System Description

The study addresses potential privatization of the electric, gas, water, and wastewater systems at Randolph AFB.

Operational Risk Management

Using the methodology outline in AF Pamphlet 91-215, Base personnel assessed the risk of privatization to Base operations and found that all identified risks could be mitigated through corresponding contract requirements. The three most significant risks identified and associated mitigation measures were:

- 1. Inadequate response time to power outages resulting in mission degradation. Mitigation: Add response times with penalties.
- 2. Decreased base staff reduces the Base's disaster and spill response ability.

 Mitigation: Add response times to the service agreement; provide for direct Air Force/operator communications.
- 3. Decreased system control resulting in potential legal/environmental liability. Mitigation: Add contract provisions to limit Air Force liability.

Regulatory Influence

The following table outlines the utility regulatory structure in Texas as it applies to the portion of Randolph AFB that is not exclusive federal jurisdiction.

Utility	Regulator	Regulation of Service Areas and Rates
Electric	Public Utility Commission of Texas (PUCT)	PUCT approval is needed to serve; to set rates.
Gas	Texas Railroad Commission (RRC)	No regulation of service area; RRC approval needed to set rates.
Water	Texas Natural Resource Conservation Commission (TNRCC)	TNRCC approval is needed to serve; to set rates.
Wastewater	TNRCC	TNRCC approval is needed to serve; to set rates.

Competition

The following table indicates the level of anticipated competition and number of statements of interest received. The table also indicates, based on the regulatory structure, whether the sale will be open to competitive bidding or limited to sole source.

Utility	Level of Interest	Statements Of Interest	Acquisition
Electric	High	5	Competitive
Gas	High	6	Competitive
Water	High	6	Competitive
Wastewater	High	6	Competitive

Economics

The following table summarizes the economics of privatizing each system. It indicates the replacement cost new less depreciation (RCNLD) value of each system, the level of capital needed to be invested in the system, and the present value (PV) of status quo costs, privatized costs, and savings resulting from privatization. When savings from privatization are positive, the system meets the economic criteria.

Utility	RCNLD	Capital to Remedy Deficiencies	PV Status Quo	PV Privatized	Life Cycle Savings	Economic
Electric	12,908	-	18,454	16,594	1,860	Yes
Gas	3,101	52	4,045	3,585	461	Yes
Water	1,581	1,719	16,811	13,152	3,659	Yes
Wastewater	505	1,617	5,468	4,407	1,060	Yes

Note: All values are in thousands of dollars.

Marketing Strategy

Based on market interest and the regulatory environment, service providers should be selected on a competitive basis. In order to receive highest value for the Air Force, bids should be requested from the list of alternative groupings of utilities included in the TRDP. Specific optional bid packages of utility systems are recommended in this report. Bidders could bid on as many packages as they would like.

Recommendations

Continue to Phase II of the Air Force Utility Privatization Process for all utilities studied at Randolph AFB.



DEPARTMENT OF THE AIR FORCE

MEMORANDUM FOR HQ AETC/CE

8 MAY 1999

FROM: 12 FTW/CV

SUBJECT: Randolph AFB Utilities Privatization Analysis Phase I Decision

- My staff has received and reviewed the Phase I feasibility report for Randolph AFB for the
 water, waste water, electric, and natural gas systems, and concur with the report findings and
 recommendations. In accordance with the Air Force utilities and privatization policy and
 guidance document, Randolph AFB will proceed with Phase II of the process toward successful
 execution and ultimate privatization of the subject utility systems.
- Please contact Lt Col Neil Kanno, 12 CES/CC, DSN 487-2401, should you have any questions.

LAWRENCE H. STEVENSON
Brigadier General, USAF
Commander, 12th Flying Training Wing

Attachment: Decision Document

2 4 MAY 1999

1st Ind, HQ AETC/CE

MEMORANDUM FOR HQ USAF/ILE

HQ AETC concurs with the 12 FTW/CC plan to proceed to Phase II of subject project.

DAVID M. CANNAN, Colonel, USAF

The Civil Engineer

Attachment:

Decision Document

REVIEW AND APPROVAL

Randolph AFB TX

Electric, Waste, Waste Water, and Natural Gas Systems. There are no other regulatory constraints preventing the privatization of these systems. The operational impact and risk management analysis identified no hazards that would present an unacceptable risk if the systems were privatized. Several firms have responded to the market survey and indicated an interest in acquiring the systems at Randolph AFB. The economic analysis also indicates privatization is feasible.

Recommendation: Proceed to Phase II for all systems at Randolph AFB.

CLARENCE D. DENIS

Base IPT Chair

NEIL K. KANNO, Lt Col, USAF

Base Civil Engineer

LAWRENCE H. STEVENSON

Brigadier General, USAF

Commander, 12th Flying Training Wing

1 8 MAY 1999

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Acronyms and Abbreviations

AC asbestos cement

ACC Air Combat Command

ACCRA American Chamber of Commerce Researchers Association

ACHP Advisory Council on Historic Preservation

ADAL add/alter

AETC Air Education and Training

ADD average daily demand

AFB Air Force Base

AFS Air Force Station

AFCEE Air Force Center for Environmental Excellence

AFCESA Air Force Civil Engineer Support Agency

AFFARS Air Force Federal Acquisition Regulations Supplement

AFI Air Force Instruction

AFLMA Air Force Logistics Management Agency

AFLSA Air Force Legal Services Agency

AFLSA/ULT Air Force Legal Services Agency Utility Litigation Team

AFM Air Force Manual

AFREA Air Force Real Estate Agency

AGA American Gas Association

AGE aerospace ground equipment

ANG Air National Guard

APPA American Public Power Association

ARAR applicable or relevant and appropriate requirement

BCBC Brooks City-Base Concept

BCP base comprehensive plan

BRAC Base Realignment and Closure

Btu British thermal unit

CAC cost account code

CADD computer-aided drafting and design

CATEX categorical exclusion

CBD Commerce Business Daily

CCN Certificate of Public Convenience and Necessity

CE Civil Engineering

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CEV capitalized earnings value

cf cubic foot

CFR Code of Federal Regulations

cfh cubic foot per hour

cfs cubic foot per second

DERP Defense Environmental Restoration Program

DFARS Defense Federal Acquisition Regulations Supplement

DMR Discharge Monthly Report

DO Delivery Order

DoD U.S. Department of Defense

DoDD U.S. Department of Defense Directive

DoDI U.S. Department of Defense Instruction

DRI Defense Reform Initiative

EA environmental assessment

EBS environmental baseline survey

EIAP Environmental Impact Analysis Process

EIS environmental impact statement

EMCS energy management and control system

EPA U.S. Environmental Protection Agency

ERIS economic resources impact statement

ESPC Energy Savings Performance Contract

FAR Federal Acquisition Regulation

FERC Federal Energy Regulatory Commission

FM Financial Manager

FONSI Finding of No Significant Impact

FOSL Finding of Suitability to Lease

FOST Finding of Suitability to Transfer

ft foot

ft² square foot

ft/s foot per second

FTC Fire Training Center

FTE full-time equivalent (work year)

FY fiscal year

FYDP Five-Year Defense Plan

G&A general and administrative (costs)

gal gallon

gpd gallons per day

gph gallons per hour

gpm gallons per minute

GSA General Services Administration

GSE ground support equipment

hp horsepower

HQ Headquarters

HVAC heating, ventilation, and air conditioning

IDIQ indefinite delivery/indefinite quantity

I/I infiltration and inflow

in. inch

IPT Integrated Process Team

IRP Installation Restoration Program

km kilometer

kV kilovolt

kWh kilowatt-hour

L liter

lb pound

lf linear foot

LID local improvement district

LUD local utility district

m meter

MAJCOM Major Command

MAOP maximum allowable operating pressure

MCC motor control center

MCF thousand cubic feet (natural gas)

MDD maximum day demand

MG million gallons

mgd million gallons per day

mgm million gallons per month

MILCON Military Construction

mV millivolt

MVA megavolt ampere

MW megawatts

MWh megawatt-hour

NAVFAC Naval Facilities Engineering Command

NEPA National Environmental Policy Act

NOV notice of violation

NPDES National Pollutant Discharge Elimination System

NPV net present value

NWCF Navy Working Capital Fund

O&M operation and maintenance

OCLD original cost less depreciation

OH overhead

OMB Office of Management and Budget

ORM Operational Risk Management

OSD Office of the Secretary of Defense

PCV pressure control valve

PE polyethylene

PG&E Pacific Gas and Electric Company

PHD peak hour demand

PLC programmable logic controller

PM preventive maintenance

PMP Program Management Plan

POL petroleum, oil, and lubricant

POM Program Objective Memorandum

POTW Publicly Owned Treatment Works

PPP Priority Placement Programs

psi pound per square inch

psig pound per square inch gauge

PUCT Public Utility Commission of Texas

PUD public utility district

PVC polyvinyl chloride

QA/QC quality assurance/quality control

QAE quality assurance expert

RCN replacement cost new

RCNLD replacement cost new less depreciation

RCRA Resource Conservation and Recovery Act

RIF reduction in force

RFI request for statement of interest

RFP request for proposal

ROD Record of Decision

Rpr/Rpl repair/replace

SA-ALC San Antonio—Air Logistics Command

SAF Secretary of the Air Force

SAF/AQ Assistant Secretary of the Air Force, Acquisition

SAF/AQC Deputy Assistant Secretary of the Air Force, Contracting

SAF/FMB Deputy Assistant Secretary of the Air Force, Budget

SAF/FMC Deputy Assistant Secretary of the Air Force, Cost and Economics

SAF/GCN Deputy General Counsel for Installations and Environment, Department of

the Air Force

SAF/LL Assistant Secretary of the Air Force, Legislative Liaison

SAF/MII Deputy Assistant Secretary of the Air Force, Installations

SAF/PA Deputy Secretary of the Air Force, Public Affairs

SCADA supervisory control and data acquisition

scfd standard cubic feet per day

scfh standard cubic feet per hour

SIC Standard Industrial Classification

SOI statement of interest

SOQ statement of qualifications

SRAR Shop Rate Analysis Report

SSA Source Selection Authority

SSET Source Selection Evaluation Team

SSP Source Selection Plan

TEP Total Energy Plant

TOA total obligation authority

TRDP Texas Regional Demonstration Project

UG underground

USACE U.S. Army Corps of Engineers

USAF U.S. Air Force

USAF/DPP U.S. Air Force, Division of Personnel Programs, Education, and Training;

Deputy Chief of Staff, Personnel

USAF/ILE U.S. Air Force, Office of the Civil Engineer

USAF/ILEC U.S. Air Force, Engineering Division, Office of the Civil Engineer

USAF/ILEI Competitive Sourcing and Privatization Division, Office of the Civil Engineer

USAF/ILEO Operations Division, Office of the Civil Engineer

USAF/ILEP Programs Division, Office of the Civil Engineer

USAF/ILEV Environmental Division, Office of the Civil Engineer

USC United States Code

UST underground storage tank

VCP vitrified clay pipe

yr year

1.0 Introduction and Approach

1.1 Project Overview and Objectives

This Feasibility Analysis Report has been prepared by CH2M HILL under Air Force Civil Engineer Support Agency (AFCESA) Contract No. F08637-94-D-6002 to support privatization of the electrical, water, wastewater, and natural gas utilities at Randolph Air Force Base (AFB), Texas. Privatization is the process by which the U. S. Air Force (USAF) will transfer to a utility company or other qualified entity the responsibilities for system ownership and the obligation to provide quality service to all installation facilities. The Air Force is privatizing installation utilities in accordance with the Defense Reform Initiative (DRI) of November 1997, which requires that all Department of Defense (DoD) utility systems be privatized (except those needed for readiness or unique security reasons or when privatization is uneconomical). Title 10, §2688, Utility System Conveyance Authority, of the U.S. Code (10 USC §2688) provides the legislative authority for utility privatization.

The Installation/Wing Commander will use the results of this analysis to execute appropriate privatization projects. The Major Command (MAJCOM) will assist and facilitate the privatization process and interact with HQ USAF/ILEI on policy issues and the Deputy General Counsel for Installations and Environment, Department of the Air Force (SAF/GCN) on legal issues. Headquarters, Air Force Civil Engineer Support Agency (HQ AFCESA) and Headquarters, Air Force Center for Environmental Excellence (HQ AFCEE) will provide technical and contract support for performing the required analyses.

The Air Force has developed the following process for utilities privatization:

- **The Preliminary Screening Process** is performed for all programmed utility systems to determine which systems are exempt from privatization for readiness or unique security reasons. Exemption decisions are made by the Secretary of the Air Force (SAF).
- **Phase I: Project Plan and Feasibility Analysis.** This phase results in the Project Plan and Feasibility Analysis Report. The Project Plan establishes the scope and management components of the privatization project. The Feasibility Analysis identifies those utility systems for which privatization is economically viable, and determines whether responsive proposals for the purchase of the system(s) are likely to be received.
- **Phase II: Comprehensive Analysis.** This phase results in a Draft Comprehensive Analysis Report and Draft Request for Proposal (RFP). The Comprehensive Analysis Report includes analyses on real estate, environmental, transition, and planning issues affecting privatization. This phase also determines appropriate terms and conditions to be factored into preparing the Draft RFP.
- **Phase III: Final Feasibility, Approval, and Implementation.** This phase results in an Approval Package submitted for SAF approval. This Approval Package includes the Final Comprehensive Analysis Report and the final revised proposal of the selected offeror. The Final Comprehensive Analysis Report includes a certified Economic

Analysis and updates to the transition plans all based on the final revised proposal of the selected offeror.

Once each phase is completed, the resulting documents will be reviewed to determine whether to proceed to the next phase or exempt the utility system from privatization. Only the SAF can exempt a utility system from privatization.

This Feasibility Analysis Report presents the results of the analyses performed under Phase I in order to justify: (1) continuing on to Phase II, or (2) eliminating a utility (or utilities) from further consideration for privatization.

This project for Randolph AFB is part of the Texas Regional Demonstration Project (TRDP) for privatization of utility systems on Air Force utility systems in Texas.

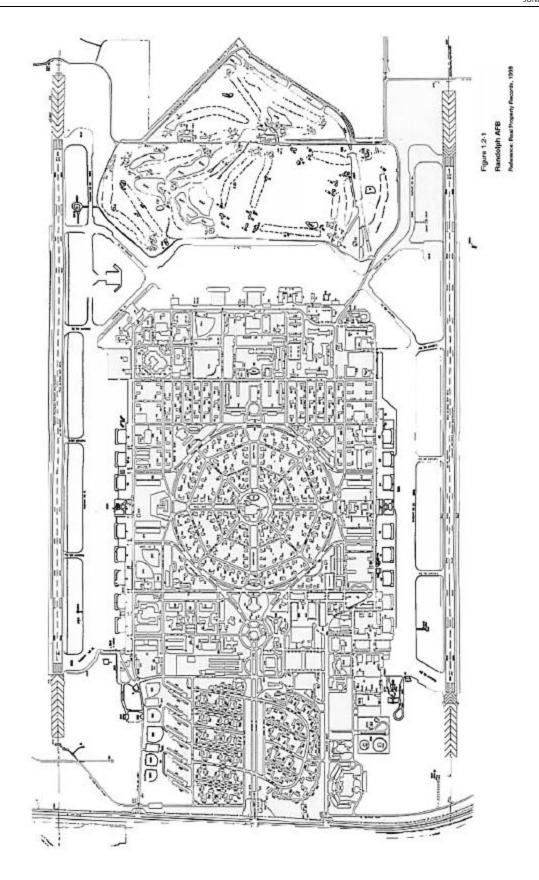
1.2 Randolph Air Force Base Overview

Randolph AFB, located 17 miles east-northeast of San Antonio in Bexar County, Texas, is an Air Education and Training Command (AETC) installation that functions primarily as a training base, command headquarters, and personnel support center. The host command is the 12th Flying Training Wing (12 FTW), which conducts pilot instructor, navigator, and advanced instrument training in a variety of aircraft. Randolph AFB also hosts a number of tenant units, including:

- HQ AETC
- HQ USAF Recruiting Services
- HQ 19th Air Force
- HQ Air Force Personnel Center
- Air Force Management Engineering Agency
- Air Force Services Agency
- Air Force Legal Services Agency and Air Force Judiciary Central Circuit
- Air Force Audit Agency
- Air Force Office of Special Investigations
- Naval Civilian Personnel Data System Center
- Defense Civilian Personnel Management Service

Randolph AFB occupies 2,894 acres and contains approximately 691 buildings. ¹ Figure 1.2-1 shows the Base layout. Two parallel runways bound the Base to the east and west, and approximately 270 functional aircraft are assigned to the 12 ATW. Randolph AFB is

¹ The nonresidential structures include offices, industrial maintenance and repair facilities, flight operations structures, and community service facilities (e.g., schools and clinic). The housing units include detached single residences, duplexes, townhouses, dormitories, Visiting Officers' Quarters (VOQs), Visiting Airmens' Quarters (VAQs), and Temporary Lodging Facilities (TLFs).



surrounded by developed communities: Universal City and Converse to the north and west, and Schertz to the south and east.

The Base has a total population of approximately 19,000, including military personnel, civilian employees and support personnel, and dependents. The Base also serves nearly 20,000 retirees in the greater San Antonio area. Randolph AFB's annual payroll is approximately \$400 million (combined military and civilian), and the Base is estimated to contribute approximately \$1.1 billion to the local economy through civilian employment, contracting and purchases from local businesses.

The Base was established in 1928 as the Air Corps Training Center, and many of its facilities were constructed by 1931. New facilities have been added or upgraded throughout the years since to accommodate changing missions and new aircraft, and the Base is currently almost fully developed. Most of the planned capital improvement projects involve upgrades or repairs to the existing facilities. Undeveloped parcels are located along the east and west boundaries beyond the runways, and some of the western parcels are being developed for administrative and recreational uses.

Randolph AFB has recently experienced an increase in personnel and expanded mission responsibilities resulting from Base Realignment and Closure (BRAC) actions. The Base's flying operation is also expected to increase as the new Joint Primary Aircraft Training System (JPATS) aircraft begin replacing the current T-37 aircraft in 1999; combined operations of both aircraft are planned for Randolph AFB through 2010.

The Base has been almost fully developed, with little available space for expansion. Key projects planned for Randolph AFB will increase the total square footage of buildings on Base by less than 1 percent.

1.3 Approach

This section provides an overview of the approach taken to conduct the feasibility analysis of the Utilities Privatization Process for the TRDP. More detailed discussion of the general approach to the feasibility analysis is included in the *Air Force Utilities Privatization Policy and Guidance Manual*, USAF, October 1998 (the P&G Manual).

In accordance with the P&G Manual, Phase I of the utility privatization process is executed at the installation level, with or without contractor support. The lead for developing the project will fall to the Installation Civil Engineer under the guidance of the Installation/Wing Commander. In this case, AFCESA has contracted with CH2M HILL to assist Randolph AFB in preparation of the feasibility analysis.

The objective of Phase I was to determine whether privatization is likely to be both viable and economic. This information is needed for the Air Force to assure itself that an award will likely be made if it decides to proceed with Phases II and III of the privatization process. The products of Phase I are the Project Plan and the Feasibility Analysis Report. Once the report is completed, it is submitted to MAJCOM, AFCESA, and Air Staff. Following several tiers of review, the Wing must decide whether to approve the Go/No Go decision and receive MAJCOM endorsement. If a Go decision is made, Phase II of the study proceeds. If a

No Go decision is made, it is forwarded to the SAF for approval to exempt the system(s) from the privatization program.

To coordinate project activities, the Air Force developed a Utility Privatization Project Integrated Process Team (IPT) for the TRDP. Members included representatives from each base, each affected command, Air Staff, AFCESA, DESC, and AFCEE. Organization charts and assigned responsibilities were included in the Project Plan, published in November 1998.

The primary effort in Phase I was preliminary research and analysis that led to preparation of this Feasibility Analysis Report. As noted above, the purpose of this analysis is to determine whether privatization is likely to be both viable and economic. Individual tasks included in the analysis are discussed in the following subsections. These tasks were conducted according to the task outline included in the project plan. In addition to discussion of the purpose of each task, a description of the technical approach to each is also presented.

1.3.1 Project Plan

The Project Plan describes the following:

- Project scope
- IPT team members and their responsibilities
- Communications plan and points of contact
- Project schedule
- Resources required to execute the project

The Project Plan was prepared with the input of each feasibility analysis team member and was formally submitted after the project kickoff meeting.

1.3.2 Kickoff Meeting

A kickoff meeting was conducted to familiarize all Air Force staff with the Utilities Privatization Process. In addition to participation by Base staff, the Air Staff, the command, AFCESA, and CH2M HILL project managers provided Utilities Privatization program and guidance overviews. The meeting was conducted in two parts:

- Initial segment. Team members were introduced to one another, and Base management and staff were briefed about the privatization process. Base personnel described the Base and its utility systems, and questions were answered.
- Second segment. This segment focused on Air Force delivery and review of data that were requested by CH2M HILL prior to the meeting.

1.3.3 Industry Market Analysis

Key to the feasibility of utility privatization is the interest of utility service providers in purchasing the systems and providing service to the Base. To determine the level of interest in the on-Base utility systems, a market analysis was performed. The analysis was based primarily on obtaining statements of interest (SOIs) from potential purchasers of the TRDP utility systems. The SOIs were obtained by the following actions:

- 1. An advertisement was placed in the *Commerce Business Daily* (CBD) on November 24, 1998. A copy of this advertisement is provided in Volume II, Section 2.0, of this report. The advertisement was a request for a statement of interest (RFI) from utility service providers who are interested in acquiring one or more of the TRDP utility systems. It provided:
 - A description of the purpose, approach, and utility systems included in the TRDP
 - A request for the interested party's ideas regarding, among other things, a conceptual rate plan, conjunctive billing², conceptual bases for a purchase price, and existing franchises vs. the interested party's ability to provide service
 - An e-mail address where more information about the opportunity could be requested
- 2. A number of national and Texas associations of electric, gas, water, and wastewater utilities were contacted and sent a copy of the advertisement. A listing of associations contacted is included in Volume II, Section 2.0. These associations were asked to distribute the RFI to their membership. Spot checks confirmed that this distribution occurred in many cases.
- 3. Existing utility suppliers were contacted by telephone to make them aware of the privatization program and the RFI and to answer any questions they might have. Telephone conversation records are included in Volume II, Section 2.0.
- 4. Some private entities were directly contacted to be sure they were aware of the RFI.

On the basis of information received in response to the RFI, analyses were conducted to determine market interest in each utility; possibilities for bundling, or packaging, more than one utility together for a combined sale; and prospective purchaser ideas about rate structures, conjunctive metering, and purchase price.

1.3.4 Operational Impact Analysis

The operational impact is an important consideration in determining privatization feasibility. Operational impact analysis for this study was designed to:

- Determine potential negative impacts of utility privatization on Base operations and mission
- Assess the risk of the negative impacts occurring
- Identify mitigation actions to reduce these risks

CH2M HILL worked closely with the individual base privatization teams and key personnel to discern the potential impacts of the proposed privatization on existing and projected operations in and around the base. CH2M HILL used the risk management practices

² For the purposes of this report, conjunctive billing is a billing practice under which utility service is delivered to several locations and the billing units for these deliveries are aggregated into a single quantity for billing purposes. By combining these units into a single quantity, the quantity is billed at a lower rate than would occur if the individual loads were billed separately. This is because rates are normally lower for larger uses.

established in Air Force Pamphlet 91-215, Operational Risk Management (ORM) Guidelines and Tools, and provided in the P&G Guidance Manual, to identify potential hazards, assess risk, and analyze control measures. ORM workshops served as appropriate forums to allow CH2M HILL to work closely with key base personnel to perform this assessment. A separate workshop was conducted at each base, and all potentially privatized utilities were addressed together.

The technical approach used to conduct the ORM workshop at Randolph AFB and to analyze data obtained in the workshop is discussed in detail in the February 12, 1999, technical memorandum on Operational Impacts Analysis for the TRDP. This technical memorandum is included in Volume II, Section 3.0.

1.3.5 Regulatory Review

The regulatory rules and regulations are a controlling factor in development of the strategies to privatize utility systems. Because of the complex and specialized nature of this subject, especially in Texas, the services of a noted law firm were acquired to research the regulatory environment for utility privatization on Air Force bases in Texas. This research included review and evaluation of:

- Pertinent case law
- Existing rules and regulations of the three Texas commissions that have jurisdiction over the various utilities for which privatization is being considered
- Existing and pending state legislation
- Federal and state jurisdictional issues

Legal research was conducted, commissioners and commission staff were interviewed, and pertinent documents acquired. Evaluation was made of:

- Whether utility service on Base is subject to commission regulation
- Service area and franchise rights
- Abilities of potential bidders for Air Force utilities to obtain certification and the right to serve
- Overlapping jurisdiction of state commissions and municipalities
- Ratemaking requirements and constraints
- Metering options
- Sales price implications of regulatory rules
- Service standards

Based on this research and analysis, conclusions were drawn about the ability of the Air Force to sell each of its utility systems through a competitive process, whether rates can be negotiated with the successful bidder for the utility systems, possible constraints to potential sales prices, and whether conjunctive billing of Air Force utility usage is feasible.

1.3.6 Utility System Evaluation

To understand the marketability of each utility system being considered for privatization, each utility system was evaluated. This evaluation included:

- An overview of the utility system. This included developing an understanding of the system and developing a database on the system inventory and its value in terms of its replacement cost new (RCN) and replacement cost new less depreciation (RCNLD).
- A utility system requirements assessment. This included estimation of the existing and future loads and assessment of the existing system capacity. Assessment of the existing capacity included analysis of its ability to meet future loads, compliance with regulations, and overall condition.
- A review of the on-Base capacity relative to off-Base capacity.

Each of these evaluations is discussed below.

System Overview

An overview of each utility system was obtained in the following three steps:

- 1. A site visit was conducted to observe the system condition; review pertinent utility system records, reports, and plans; study system maps; and discuss the characteristics and operations of the utility with system operators.
- 2. Operations personnel were interviewed to:
 - Determine the approximate age of the various system components.
 - Understand system loading and capacity characteristics and balances. In these
 interviews, data were obtained regarding system outages and capacity problems (if
 any).
 - Become familiar with any operational problems.
- 3. Plans for future Base expansion over the next 5 years were reviewed with operations personnel. Also discussed were operator experience with past facility renewals and upgrades and their effect on the system operations.

An inventory of the utility system assets was conducted to establish a list of system assets. The inventory was developed primarily from "take-offs3" from system drawings. As guidance for these take-offs, interviews were conducted with system engineers and operations and maintenance staff, property records were reviewed when certain data were not available from maps, and physical observations were made. In some cases, when data were not available, estimates were made. For example, when the diameter of a specific buried line was not known, it was estimated based on system diameters upstream and downstream from the pipe of unknown diameter.

Once the inventory listing was complete, the RCN value of the system was estimated by multiplying current installed unit costs for a given inventory component times the number

³ Take-offs are estimates of physical inventories based on information taken from system maps.

of those units included in the inventory. The bases for estimating these unit costs were primarily from the following sources:

- Information obtained from consultant cost estimating and engineering departments.
 These data were developed from actual construction experience on similar electrical projects. This experience was compared to recent projects that were completed by an independent contractor, as well as information gathered from other consultants on recent bid proposals received.
- 2. Richardson Engineering Services. *Process Plant Construction Estimating Standards*. Mesa, Arizona. 1998.
- 3. R.S. Means Co. *Building Construction Cost Data*. 56th Annual Edition. Kingston, Massachusetts. 1998.
- 4. Manufacturers' material and equipment cost estimates and quotations.

Unit costs were also based on the cost of building the utility facilities today with existing conditions and technology. For example, in cases where new materials have been developed that are lower cost and perform as well as existing facilities, the value of the lower cost facility was assigned to the existing facility. Because the new material (e.g., plastic pipe) served the same function as the more expensive, outdated material (e.g., steel pipe), the outdated material was considered to be worth only the cost of the new material.

To determine the RCNLD value of the system, the percentage of remaining useful life was determined for each system component and multiplied times the RCN value for the component. The percentage of remaining useful life was determined in a four-step process as follows:

- 1. The age of each system component was estimated. This was generally based on information available from operating personnel and from Air Force records.
- 2. The expected life of each system component was estimated on the basis of engineering judgment and Air Force estimates.
- 3. Dividing the age of specific components by its expected life yielded an estimate of the percent by which the component had depreciated.
- 4. Subtracting this percentage from 100 percent yielded the percentage of remaining useful life for the component.

Utility System Requirements

The purpose of this task was twofold:

- 1. Determine whether system deficiencies exist relative to the existing system's capacity to:
 - Meet existing and future loads
 - Meet regulatory requirements
 - Perform reliably

2. Determine whether any excess capacity exists on Base that might have off-Base value, or if excess capacity exists off Base, that might have on-Base value

This task involved the following specific analyses.

Current and Future System Loads

This included identification of major planned construction or mission changes through the year 2003 and evaluation of the impact these changes will have on system requirements. Future loads were estimated by prorating existing loads on the basis of the planned relative change in the square footage of buildings on Base. These forecasts were tempered by consideration of the Base's conservation plans.

System Capacity

Ability to Meet System Requirements. This consisted of an engineering review of the system by reviewing operating records and the experience of Base personnel who operate the system. Existing capacity was determined for system components and for the system as a whole and evaluated against estimated system peak demands. Load flow models were not available for this analysis. Any system problems in meeting existing or forecast loads were identified as system deficiencies.

Compliance with Regulatory Requirements. As part of the system tour and in interviews with Base personnel, a review was made to determine whether the system had any major violations of existing or expected regulatory requirements. Any observed violations were identified as system deficiencies.

System Condition. A facility condition assessment was conducted in concert with the inventory development. The assessment was made to identify deficiencies, both physical and functional, that must be corrected to bring the utility system to industry standards. The assessment was accomplished by reviewing Civil Engineering Programming documentation, Findings and Recommendation studies, maintenance records, interviews with operators and users, and minimal physical surveys. If deficiencies were identified, remedies were defined and associated costs were estimated. Depending on the deficiency, the remedy could include repairs to existing plant or new construction.

Off-Installation Capabilities

The possibility of excess capacity in each system was evaluated to determine whether it could be productively used for off-Base purposes after acquisition by a private entity. This would be a factor in acquisition strategy and could influence bundling, marketing strategies, and economic factors discussed later in this section. Similarly, off-Base capacity was evaluated to determine whether existing on-Base capacity could more effectively be provided from off-Base. This related primarily to water supply and wastewater treatment possibilities.

1.3.7 Preliminary Economic Analysis

The economic analysis involved completion of the Preliminary Economic Analysis process described in the P&G Manual. The intent of this analysis was to eliminate from further evaluation utility privatization prospects that are highly likely to be uneconomical.

The preliminary economic analysis consisted of developing cash flow projections for costs associated with both the status quo and privatization alternatives and then comparing the present value of one with the other. Consistent with guidance in Air Force Manual 65-506, Economic Analysis, a 25-year cash-flow of costs for both alternatives was projected. For this analysis, the base year of the costs was fiscal year (FY) 2001; cash flows were projected in constant FY 2001 dollars.

The cash flow projections and present value calculations are discussed below.

Projected Cash Flow—Status Quo Alternative

The cash flow for costs associated with the status quo included projections of operating and capital costs. Capital costs were projected to include costs to remedy system deficiencies and annual renewal and replacement costs. Each of these is discussed below.

Operating Costs

For this analysis, operating costs are defined to include the cost of operation, maintenance, and administration. They include "general and administration" (G&A) costs but exclude capital costs for renewals, replacements, upgrades, and extensions of the system. Analysis was conducted to determine the actual operating cost of the status quo for the electric, gas, water, and wastewater utilities.

The Air Force does not keep a separate set of financial records focused on the cost to operate, maintain, and administer individual Base utility systems. As a result, actual operating costs were estimated for this study. The approach taken to make these estimates is detailed in a technical memorandum titled Approach to Estimating Status Quo Operating Costs, Randolph AFB, and included in Volume II, Section 1.0, of this report.

Cost to Remedy System Deficiencies

If deficiencies were identified, the cost to remedy the deficiencies was estimated. In some cases, these estimates were available from Air Force plans. In other cases, the cost of these remedies was estimated for this report. Generally, it was assumed that these remedies could be accomplished in the first year of the projected cash flow, 2001. In cases where major projects were identified, the cost of the remedy was spread over the first two years, 2001 and 2002.

Renewal and Replacement Costs

In addition to normal operating costs, each utility system must be maintained in good operating condition through normal renewals and replacements of system facilities. These activities are generally not uniform, because facilities tend to wear out and need replacement intermittently. However, for the purposes of this preliminary economic analysis, the annual cost of these renewals and replacements was projected based on an average annual amount. Given that the cash flow was projected in constant 2001 price levels, this uniform annual cost would naturally be the same as the average annual depreciation rate and was therefore projected on the basis of this rate. The average annual depreciation rate was calculated based on the weighted depreciation rate of each system component. This was done by determining the proportion of the system component cost to the total system RCN value, multiplying this percentage times the depreciation rate for the given component, and summing the resulting ratios for each system component.

Multiplying the resulting weighted depreciation rate for the system as a whole times its RCN value provided the annual system depreciation in 2001 dollars. This value was assumed equal to the average needed renewal and replacement investment for the system.

The exception to this approach was for the natural gas system on Base. Because it will be essentially a new system after system deficiencies are remedied, it was projected that the need for renewals and replacements will be minimal during the 25-year forecast period. The approach to projecting renewals and replacements for the gas system is described further in Section 6.0.

Adjustments to Status Quo Costs

Critical review of existing utility system operations showed that they might or might not reflect the activities that should be conducted by the Air Force to maintain the system in good condition. In cases where it was concluded that the activities that should be conducted differed from actual activities, the status quo costs were adjusted to "should costs." These are referred to as "adjusted status quo costs" in this study. These costs were used in the projected status quo operating cost projections for the preliminary economic analysis.

Projected Cash Flow—Privatization Alternative

The Air Force's projected cash flow for the privatization alternative would include a rate to be paid for the utility service on Base as well as a negative cost in the form of a cash inflow from the proceeds of the utility system sale. It was assumed that the utility service rate would include components for the privatizer to recover its operating costs, its capital costs to remedy system deficiencies and make normal renewals and replacements, and its purchase payment for the utility system.

In addition, the Air Force would incur transition costs to continue the privatization process. After transition of ownership, the Air Force would incur costs to administer its relationship with the utility service provider on Base. Finally, the cost of capital for privately owned utility service providers is higher than it is for the Federal government and publicly owned utilities. For private utility service providers, this higher cost of capital is also considered.

Each of these costs is discussed below. Also discussed below is the cost of metering options normally considered in the context of utility privatization.

Operating Costs

Operating costs for the privatization alternative were estimated based on two variations from the adjusted status quo costs. These variations are in the labor required to operate, maintain, and administer the system, and in the wage rate, including benefits, that would need to be paid for this labor.

Operating costs incurred by a utility service provider at Randolph AFB would depend on the utility service provider that acquires the utility system. Existing utilities in the immediate area would have a different approach to the operation and maintenance of the utility system than would other interested entities that do not currently provide utility service locally. This is because existing, local utilities can incorporate the Base's utility system into their existing operation with relatively little extra effort.

Remote utility service providers, on the other hand, would find it necessary to place someone on the Base either in a part-time or full-time capacity to monitor and act as a service coordinator in the event of a service interruption. Repair work would be done either through the corporation's own forces or through maintenance and service contracts with local providers.

Costs of both existing local utilities and remote utility service providers were considered in developing cost inputs for the evaluation of the privatized alternative. However, the projected cost for operation and maintenance by a credible least cost utility service provider was used in the projection of privatized operating costs.

Costs to Remedy System Deficiencies and Normal Renewal and Replacement Costs
Because it was assumed that the status quo would include full remedy of system
deficiencies and adequate capital to keep the utility system in good shape, it was assumed
for the purposes of the preliminary economic analysis that these costs would be the same for
the privatization alternative.

Proceeds from the Purchase Price

In determining bids to buy or offers to sell, buyers and sellers consider a number of factors. For utility systems, those normally considered include the following:

- Original cost less depreciation (OCLD)
- RCNLD
- Capitalized earnings value (CEV)

These estimates normally vary widely but serve as a basis for ultimately determining a price.

OCLD is essentially the same as net book value of a system. As such, it does not include the effects of price inflation that occurred since the capital assets were originally placed in service. The value of each asset is reduced by the amount of depreciation that has occurred since the assets were placed in service. As discussed in Section 4.0, regulators use OCLD as the basis for ratemaking in Texas.

As noted above, RCNLD is calculated by estimating the cost of constructing the existing utility system with today's construction techniques and price levels. This value is then reduced by the percentage of depreciation that has occurred on the assets.

CEV is the present value of the bidder's projected return (difference between the new owner's projected revenue and costs) over time. Use of the CEV recognizes that funds invested in facilities are sunk. The focus is on future earnings or the difference between revenues and costs from ownership and operation of the purchased utility.

The actual value that will be associated with the successful bid for each utility system on Base is an uncertainty. It depends on a number of factors, including, most importantly, the rate for utility service to the Air Force that is included as part of the sales contract. For this preliminary economic analysis, it is not necessary to know the purchase price. The reason for this is that, assuming a long-term agreement for provision of utility service to the Air Force by the new utility supplier, the system purchaser will fully recover its purchase price payment through rate charges to the Air Force. This is logical because the Air Force and its

tenants are the only customers from which the new utility owner will be able to recover its costs. As a result, in the privatized cash flow projection, the negative cost of the sales proceeds to the Air Force will be cancelled out by the recovery of these costs in the purchaser's rates for utility service to the Air Force. Therefore, the utility system purchase price and the component of the privatizer's rate to recover these costs are not included in the preliminary economic analysis.

Cost of Capital

All other factors being equal, there is a difference in the cost of capital between publicly and privately owned utility service providers. Publicly owned utilities have an intrinsically lower real cost of capital than do privately owned utilities. This is documented in many places in economic and financial literature. A good explanation of this difference is included in the 1991 Northwest Conservation and Electric Power Plan (Northwest Power Planning Council, 1991). An excerpt from this plan that includes discussion of this difference in capital costs is included in Volume II, Section 1.0 of this report.

Among other factors, Federal income tax must be paid on returns to private capital. This tax is paid on debt in that the interest income to lenders holding this debt is subject to Federal income tax. Further, returns to equity capital are taxed as net income to the corporation and to its stockholders. However, because Federal income tax is paid to the Federal government, the component of a utility service provider's rates that cover this cost is not a true cost when charged to the Air Force. The payment of this implicit rate component by the Air Force is eventually received by the Internal Revenue Service. Therefore, the net cost of this rate component to the Federal government is zero. The real cost of capital assumed for private entities in the preliminary economic analysis therefore excluded Federal income taxes.

Nonetheless, the overall real cost of capital for private industry even after adjusting out Federal income tax is greater than the cost of capital for most publicly owned utilities. For this analysis, the real cost of capital for privately owned utility service providers was assumed to be 5.0 percent per year. This rate is based on analysis included in the 1991 Northwest Conservation and Electric Power Plan. The cost of capital for publicly owned utilities was assumed to be 2.9 percent per year. This cost of capital is the same as was used for the cost of capital for the Federal government. The Federal government cost of capital is specified in *Guidelines and Discount Rates for Benefit Cost Analysis of Federal Program*, Office of Management and Budget (OMB) Circular A-94, updated February 1999.

The cost-of-capital difference between publicly owned and privately owned entities affected the economic analysis in one way. It was assumed that the purchase price of the system would be financed with the Federal government, with payments being used to offset rate charges by the utility service provider. However, it was assumed that a privately owned utility service provider would finance renewals and replacements in the utility system with its own long-term financing. The premium the Federal government would have to pay for this rate component compared with that for a publicly owned utility was calculated. This calculation is shown in Volume 2, Section 1.0.

Transition Costs

To privatize any utility system, the Air Force must follow the process identified in the P&G Manual. As described above, this report is being submitted at the end of the first of three

phases outlined in the P&G Manual. It is assumed that, if the Air Force proceeds with Phases II and III of this process, it will incur costs of \$150,000 per utility.

Post-Award Administrative Costs

Once a system is privatized, the Air Force will incur new costs to oversee utility operations by the utility service provider on Base. It was estimated that this will require the services of 0.25 full-time equivalent (FTE) per privatized utility.

Metering Options

Currently, the Base pumps its water supply from system wells and distributes the commodity on Base. Water produced at each well is metered. In distributing the commodity to facilities on Base, the Air Force meters usage at only a limited number of facilities. These facilities are either metered as a basis for charging on-Base tenants for their utility usage or for monitoring usage as part of a conservation program.

The only utility usage that is not metered on Base is wastewater collection. Wastewater generation is metered for the Base as a whole, but metering of individual points of generation is impractical. Wastewater service for individual buildings is normally billed by wastewater utilities on the basis of metered water service during the winter months. This practice is based on the assumption that irrigation is at a minimum during the winter and, therefore, usage during winter months reasonably approximates the amount of wastewater generated.

The metering options for facility use on Base range from doing nothing to metering usage at each facility with utility service. The purpose of metering use by individual facilities is primarily to generate accurate data upon which service charges can be levied or from which usage can be monitored for conservation or other building management purposes.

The cost of installing meters at all currently unmetered facilities on Base was estimated for the electric, natural gas, and water utility systems. The number of unmetered facilities was estimated and segmented into facilities that would require different-sized meters. Then the average installed cost of the meter for each of these respective groups was multiplied by the number of facilities in the group to determine the overall metering cost for each group. The cost estimate for the groups was then summed to calculate the estimated cost to meter all Base facilities.

The cost of meters was not included in the life-cycle cost comparison of the status quo and privatized alternatives. This is because metering would not necessarily be required for privatized utility service. As noted in the market and regulatory sections of this report (Sections 2.0 and 4.0), conjunctive billing is feasible for all utility service on Base. Given that all military uses on Base could be aggregated for billing purposes, there would be no billing need for individual metering. Air Force usage could be conjunctively billed on the basis of the aggregate loads metered at the existing point(s) of delivery for the Base.

Present Value Calculations

The present value of the projected cash flow for both the status quo and the privatization alternative was calculated at a 2.9 percent real discount rate. This discount rate is specified in Appendix C to *Guidelines and Discount Rates for Benefit Cost Analysis of Federal Program*, Office of Management and Budget (OMB) Circular A-94, updated February 1999.

The conclusion about the economics of privatization was prepared based on a comparison between the present value of the costs for the adjusted status quo and privatization alternatives.

1.3.8 Marketing Strategies

The strategy for marketing the utilities at Randolph AFB was developed based on information from the requirements, regulatory, market, and economic analyses. The marketing strategies were developed in concert with development of marketing strategies for the other Air Force bases included in the TRDP. This included detailed consideration of bundling options for selling utilities within bases together as well as selling like utilities from a number of bases. The following issues were considered in developing the marketing strategy:

- System requirements and capacity
- Market interest
- State regulations
- Commodity supply options
- Economic analysis of privatization

The following issues were considered in selecting bundling options for this procurement:

- Market interest
- Economies of scale
- Service quality
- Existing utility suppliers and service areas
- Potential complexity of proposal evaluations

On the basis of these considerations, a marketing strategy was developed for all utilities included in the TRDP.

1.3.9 Recommendations

As noted above, both the preliminary economic analysis and the marketing strategy were developed on the basis of information developed in the market, operational impact, regulatory, and requirements analyses conducted for Phase I of the privatization process. On the basis of the economic analysis and marketing strategies, recommendations were made regarding whether and how to proceed to Phase II of the process.

2.0 Market Analysis

This section presents the results of the industry market analysis for Randolph AFB. Section 1.0 describes the approach by which letters of interest from potential purchasers were solicited and evaluated. This section analyzes the responses from the interested utility providers in terms of the following issues:

- The overall level of interest in each utility system at Randolph AFB, including descriptions of the potential utility providers expressing interest (Section 2.1)
- Interest in bundling the Base utilities, and in bundling Randolph AFB utilities with utilities at other bases (Section 2.2)
- Rate concept preferences (Section 2.3)
- Potential metering and billing options (Section 2.4)
- Purchase price concepts (Section 2.5)

Section 2.6 summarizes the general findings of the market analysis for Randolph AFB. The utility-specific sections of this report (Sections 5.0 through 8.0) summarize the market analysis findings for the individual utilities. Section 9.0 presents marketing strategies developed based on the results of this market analysis.

2.1 Level of Interest and Interested Utility Providers

Table 2.1-1 lists the interested utility providers for Randolph AFB and indicates the utilities in which they expressed interest. The table also distinguishes between publicly and privately owned utility providers.

As shown, there are five or six interested providers for each utility system at Randolph AFB. Of the current local service providers, City Public Service (electric) expressed interest in acquiring all utilities at Randolph AFB; the other current providers—PG&E Reata (natural gas) and Cibolo Creek Municipal Authority (wastewater)—did not express interest. Randolph AFB currently supplies its own water from local wells.

The following paragraphs describe the interested utility. These descriptions are summarized from the letters of interest and include as much of the following information as was provided by the respondents:

- Experience and capabilities
- Financial capacity
- Business size
- Their understanding of their legal/regulatory ability to provide service to the base
- Other pertinent legal/regulatory issues

Volume II of this report presents the actual letters of interest.

TABLE 2.1-1Interested Utility Providers
Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

	Utilities of Interest							
Utility Provider	Electric	Natural Gas	Water	Wastewater				
Publicly Owned Utility Companies								
City Public Service of San Antonio a	X	Х	Χ	Χ				
San Antonio Water System			Χ	X				
Privately Owned Utility Companies								
AquaSource	Χ	Χ	Χ	X				
Enron	Χ	Χ	Χ	X				
Entex		Χ						
Philip Utilities			Χ	X				
Texas-New Mexico Power Company	X							
U.S. Filter-Morrison Knudsen	X	X	Χ	X				
West Texas Gas		Χ						
TOTAL	5	6	6	6				

^a Existing service provider for electricity.

A summary of telephone conversations with existing service providers that did not respond to the request for information follows the descriptions of interested utilities.

2.1.1 Publicly Owned Utilities

City Public Service of San Antonio. City Public Service of San Antonio (CPS) owns, operates, and maintains San Antonio's electrical and natural gas systems. CPS is the second-largest municipally owned utility in the U.S., serving more than 530,000 customers with a total electrical generating capacity of approximately 4,500 megawatts. CPS has over 1,500 field crew personnel.

CPS operates under, and complies with, all local utility laws and the regulations governing them. It is also familiar with all state and federal environmental regulations, and maintains a staff of experts to respond to utility-related environmental issues. CPS is the current certificated natural gas and electric utility operator in the San Antonio area; its service area therefore encompasses Brooks, Randolph, and Lackland AFB. CPS believes that it has a franchise agreement with these installations. CPS also states that other utilities wishing to operate within the certificated area of San Antonio must obtain a franchise agreement with

CPS. CPS indicated that it would obtain franchise agreements with the current utility operators at Dyess, Goodfellow, Laughlin, and Sheppard AFB.

San Antonio Water System. The San Antonio Water System (SAWS) is a municipally owned water, wastewater, and recycled water utility that serves approximately 1.2 million customers in San Antonio and Bexar County. SAWS has assets of approximately \$1.3 billion, and is committing more than \$100 million over the next 5 years to construction of its recycle system. SAWS operates and maintains 85 wells, four wastewater treatment plants, and nearly 8,000 miles of water distribution mains and sanitary sewer mains. SAWS also operates a heating and cooling plant that provides steam and chilled water to a number of major buildings in downtown San Antonio. SAWS currently provides water to Brooks AFB, and wastewater treatment services to Brooks and Lackland AFB. It has also initiated an extensive water reuse program at Kelly AFB, and is planning similar projects at Brooks and Lackland AFB.

SAWS operates under, and complies with, all local utility laws and the regulations governing them. It is familiar with all state and federal environmental regulations, and maintains a staff of experts to respond to utility-related environmental issues. SAWS is also familiar with franchise agreements, and currently has a franchise agreement with the City of San Antonio.

2.1.2 Privately Owned Utility Companies

AquaSource. The letters of interest by AquaSource indicate that it proposes to partner with various electric utility cooperatives—Guadalupe Valley at Randolph AFB—to purchase the electric utilities at the bases.

AquaSource, Inc. is a water and wastewater utility company formed in June 1997 and headquartered in Houston, Texas. It is a wholly owned subsidiary of DQE, Inc., a Pennsylvania-based energy services company. AquaSource is the largest investor-owned water utility in Texas, and owns or operates water/wastewater utilities in nine other states. The company has acquired over \$177 million in assets, including water and wastewater utilities, design-build companies, system leasing and fabrication businesses, and contract operation services, and expects to acquire an additional \$100 million in early 1999. DQE has assets of over \$4.6 billion and has made an initial allocation of \$500 million to acquire water utilities.

AquaSource references its experience dealing with local, state, and federal legislation regarding utility operations and the environment, as well as its familiarity with state and federal legislation regarding privatization. The company also states that utility systems at the various bases appear to be "freestanding, self-contained systems" and may therefore be exempt from Texas laws regarding utility service areas and franchise requirements. AquaSource indicates that any purchase of the utility systems would be made at the Base fenceline, and the Base facilities "would not be commingled with other facilities of the supplier."

Enron Federal Solutions, Inc. Enron Federal Solutions, Inc. (EFSI) is Enron Corporation's designated interface for federal government energy projects. Enron is a publicly traded Oregon company with approximately \$28 billion in assets and \$20.3 billion in revenues in

1997. Enron is one of the world's largest integrated natural gas and electric companies, and is the largest U.S. provider of these utilities. Enron delivered 192.3 megawatt-hours (MWh) of electricity and 110 billion cubic feet per day (BCF/day) of natural gas to U.S. customers in 1997. The company has approximately 20 percent of the non-regulated wholesale natural gas market in North America, and 34 percent of North America's non-regulated wholesale electricity market. Enron recently purchased Wessex Water in the United Kingdom for \$2.2 billion, and is currently establishing Azurix, a U.S.-based water company that will own and operate water/ wastewater systems and treatment facilities.

Entex. Entex is a natural gas utility that serves 1.4 million customers in approximately 500 communities, including more than 300 communities in Texas. Entex distributes gas through 26,000 miles of main lines and 16,000 miles of service lines. The company's largest market is Houston, with 700,000 customers served. Entex provides natural gas service to several communities near Brooks, Randolph, and Lackland AFB.

Entex is an operating division of Houston Industries Inc., an international energy services company with annual revenues of approximately \$9 billion and total assets of about \$18.4 billion. Houston Industries is one of the largest combination electric and natural gas companies in the U.S. Entex states that, as a division of Houston Industries, it has the financial resources to purchase, maintain, operate, and expand natural gas distribution facilities.

Entex and its predecessor companies have provided natural gas service in Texas since 1866 and currently hold over 200 nonexclusive franchises in Texas. The company references its record of legal and operating compliance with each city, and its record of compliance with state and federal environmental regulations.

Philip Utilities Management Corporation. Philip Utilities is a contract operator of water and wastewater facilities that has expertise in engineering, maintenance, and operations. The company currently has 27 offices throughout North America and operates more than 20 water or wastewater facilities in the U.S. and Canada with a staff of more than 750. Philip Utilities and its subsidiaries have undertaken projects and contracts ranging in size from several thousand dollars to more than \$100 million.

Philip Utilities is owned by two shareholders: Philip Services, a provider of industrial outsourcing services with 1997 sales of \$1.8 billion and equity of approximately \$450 million, and the Ontario Teacher Pension Plan Board, an investment fund managing \$40 billion as of December 1996. They propose partnering with unnamed financial partners to provide any necessary additional funding.

Philip Utilities references its experience dealing with local, state, and federal legislation regarding utility operations, the environment, and its familiarity with state and federal legislation regarding privatization.

Texas-New Mexico Power Company. Texas-New Mexico Power Company (TNMP) provides electric generation, transmission, and distribution energy services to 220,000 customers throughout Texas and southern New Mexico. The company distributes electricity over 10,000 miles of primary distribution lines and more than 100 substations. It also owns,

operates, and maintains a 300-megawatt (MW) coal-fired generating plant in central Texas that supplies about one-third of TNMP's power needs.

TNMP is a wholly owned subsidiary of TNP Enterprises, Inc., a publicly traded entity with a market capitalization of approximately \$500 million. TNMP has approximately \$1 billion in utility assets and currently generates a cash flow of approximately \$100 million per year. The company states that a significant portion of its cash flow would be available to purchase, expand, and operate USAF utility systems. It would also raise capital from debt and equity offerings and from commercial bank loans.

TNMP and its predecessor have provided electric utility service since 1925, and the company cites evidence of consistently meeting its service obligations. TNMP is thoroughly familiar with franchise regulations and service obligations that apply to electric utility operations. It has obtained all necessary Certificates of Public Convenience and Necessity (CCNs) in its Texas service area and has established all necessary franchise relations with relevant state and municipal regulatory agencies. However, TNMP states that CCN and franchise requirements likely do not apply to electrical systems at the bases because the jurisdiction of municipal and state regulatory authorities over the land covered by these systems is preempted by the federal enclave doctrine. TNMP states that, because of these unique jurisdictional circumstances, its obligation to serve would be based on the contract of sale between USAF and TNMP rather than on municipal and state regulatory jurisdiction. TNMP also references its understanding of all applicable environmental laws and regulations.

U.S. Filter/Culligan Operating Services, Inc. and Morrison Knudsen Corporation. The team of U.S. Filter-Culligan Operating Services, Inc. and Morrison Knudsen Corporation (U.S. Filter-MK) is a contract operator of water and wastewater facilities that has expertise in engineering, maintenance, and operations. They currently operate 163 water or wastewater facilities throughout the U.S. The U.S. Filter-MK team has undertaken projects and contracts ranging in size up to more than \$200 million. U.S. Filter and MK are both publicly traded companies with 1997 combined total assets of approximately \$2.9 billion.

U.S. Filter-MK referenced their experience dealing with local, state, and federal legislation regarding utility operations and the environment, and their familiarity with state and federal legislation regarding privatization. They indicated that they would obtain a CCN for each base pursuant to Texas Administrative Code (TAC) Title 30, and stated that the CCNs would give them exclusive rights to serve the geographic area of each base. U.S. Filter-MK also indicated that current water/wastewater contracts with other utilities at some of the bases would be renewed if determined to be in the best interest of USAF and the utility. U.S. Filter-MK did not address regulatory issues associated with electric and natural gas utilities, but stated that their gas and electric partner(s) would be regulated utilities in the State of Texas.

West Texas Gas, Inc. West Texas Gas, Inc. (WTG) is a Texas public utility that owns and operates numerous interstate, intrastate, and local natural gas distribution pipelines. WTG serves approximately 23,000 residential, commercial, agricultural, industrial, and city gate customers in Texas and Oklahoma, and owns and operates the gas distribution facilities in 37 communities. The company also has non-utility operations including natural gas

marketing, oil and gas production, propane distribution, and retail gasoline/convenience store outlets. The company's current annual sales volume is approximately 20,000,000 thousand cubic feet (MCF), and its assets total approximately \$113 million. WTG is wholly owned by its president, Mr. J.L. Davis.

WTG has provided natural gas service since 1976 and understands its obligation to provide reliable service to its customers. The company indicates extensive experience in dealing with city governments regarding franchises, and has numerous franchise agreements in place. WTG also indicates understanding and compliance with all state and local laws, and the rules and regulations set forth by the Public Utility Commission of Texas (PUCT), DOT, and the Texas Railroad Commission (TRC). WTG typically conducts a Phase I or Phase II environmental study on facilities to be acquired to identify environmental compliance issues. The company is unaware of any applicable local regulations that may affect a gas distribution system operating within federal property boundaries.

2.1.3 Current Utility Service Providers That Did Not Respond to the RFI

PG&E Reata. PG&E Reata currently supplies and transports gas to Randolph AFB. In a telephone conversation, a PG&E Reata representative indicated that PG&E Reata is a large-diameter pipeline company and does not operate gas distribution systems. The company did not respond to the RFI, and the company representative indicated it was unlikely that they would respond.

Cibolo Creek Municipal Authority. Randolph AFB currently supplies its own water from local wells, and wastewater treatment is provided by the Cibolo Creek Municipal Authority (CCMA). CCMA, which has wholesale wastewater treatment contracts with many cities and some military installations, owns and maintains the lift station at Randolph AFB but not the remainder of the wastewater conveyance infrastructure. During a telephone conversation, a CCMA representative indicated that it has no staff or equipment to maintain the wastewater conveyance system, whereas its municipal and military customers do. CCMA would consider providing the service if no other company or municipality were interested. A number of cities have water distribution and wastewater conveyance systems near Randolph AFB, including San Antonio, Universal City, and Springs Hill. San Antonio (SAWS) was the only local city that responded to the RFI.

2.2 Bundling of Utility Systems

RESERVED

2.3 Conceptual Rate Plans

This section summarizes the interested utility providers' proposed approaches to developing service rates. Table 2.3-1 summarizes the plans proposed for Randolph AFB. As this table shows, most interested parties are planning to propose a custom rate for service to Randolph AFB. These rates are likely to be based on the provider's direct cost to serve the Base.

TABLE 2.3-1
Conceptual Rate Plans
Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

	Conceptual Rate Plan						
Utility Provider	Existing Rate Schedule	New/Custom Rate for Randolph AFB					
Publicly Owned Utility Companies							
City Public Service of San Antonio		X					
San Antonio Water System	X						
Privately Owned Utility Companies							
AquaSource		X					
Enron		X					
Entex		X					
Philip Utilities ^a							
Texas-New Mexico Power Company		X					
U.S. Filter-Morrison Knudsen		X					
West Texas Gas		X					

^a Letter of interest did not address conceptual rate plans.

The following paragraphs describe the proposed conceptual rate plans for Randolph AFB. These descriptions are summarized from the letters of interest.

2.3.1 Publicly Owned Utility Companies

City Public Service of San Antonio. CPS, which is currently reviewing its costs due to the unbundling of services in the electric and natural gas utility business, indicates that its monthly bill would consist of the best applicable rates for electric and gas service. The electric rate would also include a monthly facilities charge covering standard O&M expenses, required replacements/upgrades, and required new facilities (CPS does not anticipate this additional monthly charge for the natural gas utility). The electrical distribution O&M cost would be determined as a dollar amount per circuit mile, and will be adjusted annually to reflect additions to, or removals from, the system. Capital expenditures for replacements/upgrades would be recovered through leveled annual payments based on a 25-year facilities life span. The cost of construction to serve new facilities could be paid in full or included in the monthly facilities charge.

CPS did not provide information on rates for water/wastewater utilities, or the heating/cooling plant at Brooks AFB.

San Antonio Water System. SAWS indicates that the bases would pay SAWS's current published residential or commercial rates for water and wastewater service, and included these rates with their submittal. SAWS also notes that it is reevaluating its rate structure and may eliminate the current "Inside City Limit" (ICL) and "Outside City Limit" (OCL) differential in 1999. SAWS will evaluate the heating/cooling plant at Brooks AFB and the TEP at Lackland AFB in order to develop rates for those facilities.

2.3.2 Privately Owned Utility Companies

AquaSource. AquaSource proposes a rate plan based on either a cost-of-service or fixed-price concept; the company indicates that a fixed-price basis would likely reflect a higher price by requiring USAF to compensate AquaSource for risk and uncertainty that would be covered under a cost-of-service agreement. AquaSource indicates that the rate should be based on three things: recovery of expenses, recovery of AquaSource's capital investment, and a return on its investment. The company cites requirements in the Federal Acquisition Regulations (FAR) that limit utility service contracts to 10 years, and recommend that USAF depreciate capital investments over the useful life of the item, rather than over the remaining life of the contract, to lower the amortization payments reflected in the rates.

Enron Federal Solutions, Inc. EFSI indicates that a firm fixed-price arrangement will best serve the interests of USAF and the utility provider. It notes that a firm fixed-price structure will require flexibility to modify the price at the request of either party.

Entex. Entex indicates that it would design rates to recover the cost of service under normal conditions while equitably assigning those costs so that no class subsidizes service for another class. Entex rates typically include a monthly customer charge plus a commodity charge for the gas used.

Philip Utilities Management Corporation. The letter of interest by Philip Utilities does not address rate issues.

Texas-New Mexico Power Company. TNMP recommends separate accounting and pricing for unbundled electric utility services such as investment, operation, and maintenance of distribution systems. The company has unbundled the prices of its bundled services, on an average cost basis, as a first step toward alternate pricing and offering customer choice. TNMP states that the firm's project code accounting system could specifically assign costs for new distribution service to more closely tailor price to cost. This unbundled approach would provide USAF with service prices specific to its costs using cost-of-service ratemaking currently required by regulators. TNMP suggests that it could file tariffs specifically designed for military installations to meet the needs of unbundled service requirements.

U.S. Filter/Culligan Operating Services, Inc. and Morrison Knudsen Corporation. U.S. Filter-MK indicates that rates for the various utilities would be negotiated between USAF and the U.S. Filter-MK team, and would be established on a direct cost-of-service basis. Costs would be detailed in an annual report to USAF and negotiated annually based on

actual expenses and an agreed-upon margin. USAF would also have input in decisions involving potential expansion of utility service operations beyond the base boundaries.

West Texas Gas, Inc. WTG proposes that new natural gas rates be developed for each base distribution system or combination of systems. The rate per MCF would reflect WTG's actual cost of gas plus the cost of service. WTG would adjust its rate calculations at 2- to 3-year intervals and make its calculations available to the Base Commander's office for audit and reasonableness checks.

2.4 Conjunctive Metering and Billing Options

This section provides the interested utility providers' proposed approaches to conjunctive metering and billing. Seven of the nine companies interested in Randolph AFB responded to this question and five of the seven companies express a willingness to consider conjunctive metering and billing.

The following paragraphs describe the proposed conjunctive metering and billing options for Randolph AFB. These descriptions are summarized from the letters of interest.

2.4.1 Publicly Owned Utility Companies

City Public Service of San Antonio. The letter of interest by CPS does not address conjunctive metering/billing options.

San Antonio Water System. SAWS proposes to begin a program of conjunctive metering and billing and to increase the extent of water supply metering at each base. Each water supply well and each line from a storage facility would be metered, and each connection would be individually metered. This increased metering would be intended to help USAF quantify water usage for base franchise operations and review water consumption by other base facilities to facilitate water conservation.

2.4.2 Privately Owned Utility Companies

AquaSource. AquaSource indicates that it does not understand the significance of conjunctive metering at the bases. It anticipates that USAF would purchase commodities from suppliers according to existing contracts, and those purchases would be made at the base fenceline. The private operator would be responsible for owning, operating and maintaining the on-base distribution facilities. AquaSource proposes metering and billing base facilities according to the contractual relationships between USAF and its tenants.

Enron Federal Solutions, Inc. EFSI can and has structured conjunctive metering and billing agreements with customers. It believes the feasibility and effectiveness of such services should be examined on a case-by-case basis. EFSI recommends examining this issue with USAF as part of EFSI's due diligence process.

Entex. Entex states that it uses several metering and billing arrangements that could be tailored to USAF needs.

Philip Utilities Management Corporation. The letter of interest by Philip Utilities does not address conjunctive metering/billing options.

Texas-New Mexico Power Company. TNMP states that its current tariffs for ancillary services for wholesale transactions would apply to a power sales agreement with military installations and could be tailored to meet a particular installation's requirements.

U.S. Filter/Culligan Operating Services, Inc. and Morrison Knudsen Corporation. U.S. Filter-MK indicates that the inherent differences between military installations and municipalities would require increasing the extent of metering on the bases. They propose increasing electric, natural gas, and water metering to quantify utility usage separately at all facilities not funded by normal base operating funds (e.g., NAF, AAFES, and tenants from other commands or services). Wastewater utility fees would be based on water usage.

Increased metering would also focus on high-use facilities to facilitate energy and water conservation; this would involve a cooperative effort between USAF and U.S. Filter-MK. U.S. Filter-MK proposes metering to quantify the water use of facilities from different funding sources to address the increasing importance of water conservation. They propose increasing metering over time to account for water use, water loss, and to conduct water use audits as warranted.

U.S. Filter-MK and USAF would determine billing procedures; U.S. Filter-MK proposes to consolidate billing to the extent that USAF desires.

West Texas Gas, Inc. WTG would contract for the meter reading, billing, and collection functions for all utilities except gas. WTG proposes using its customer information software system to consolidate the utility billing service to base residents.

2.5 Conceptual Purchase Price

This section summarizes the interested utility providers' proposed approaches to determining conceptual purchase prices for the systems. Table 2.5-1 summarizes the approaches proposed by the respondents for Randolph AFB. As shown, there is a wide range of ideas relating to this issue, and some companies proposed more than one option. Most of the companies' responses indicated flexibility in how a purchase price should be determined.

The following paragraphs describe the proposed conceptual purchase price options for Randolph AFB. These descriptions are summarized from the letters of interest.

2.5.1 Publicly Owned Utility Companies

City Public Service of San Antonio. CPS proposes that the purchase price for the electric and natural gas utilities be based on the depreciated original cost of the facilities, minus costs needed immediately to bring the facilities up to specifications. CPS suggests that the total monthly utility bills for gas and electric service could be partially offset by payments or credits from CPS based on the purchase price. CPS also suggests that the bases should

TABLE 2.5-1Proposed Approaches to Determining Conceptual Purchase Prices Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

	Proposed Conceptual Purchase Price Approach								
Utility Provider	Nominal Price	Original Cost Less Depreciation	Replacement Cost New Less Depreciation	Capitalized Earnings Value	Unspecified or Other				
Publicly Owned Utility Companies									
City Public Service of San Antonio		Х							
San Antonio Water System					X				
Privately Owned Utility Companies									
AquaSource	Х				X				
Enron			Χ						
Entex	Х	Χ	Χ	Х	X				
Philip Utilities	Х				Χ				
Texas-New Mexico Power Company				Х	Χ				
U.S. Filter-Morrison Knudsen			Χ						
West Texas Gas		X	X	Х					
TOTAL	4	3	4	3	5				

consider using the electric utility purchase price as a credit against capital improvements or upgrades.

San Antonio Water System. SAWS would evaluate the current condition of each system at each base, calculate the number of connections, and develop a purchase price based on the system assets and customers. SAWS would also offer to purchase Edwards Aquifer groundwater rights if those rights are included in the privatization of the water utilities.

2.5.2 Privately Owned Utility Companies

AquaSource. AquaSource proposes to purchase the utility assets for a nominal amount that would enable USAF to avoid depreciation and the contractor's return on the net undepreciated investment. This would result in lower service rates. Alternatively, AquaSource could make a higher initial payment for the facilities, based on fair market value; however, that payment and the cost of required future upgrades and repairs would be recovered through service rates.

Enron Federal Solutions, Inc. EFSI proposes a fair market value (FMV) approach for purchasing the utility assets. FMV would be determined as follows: (1) derive the value of

total replacement of the systems; (2) estimate the current accumulated depreciation given system/asset age; and (3) estimate the capital investment required to upgrade the systems to meet code requirements.

Entex. Entex indicates that it would consider a variety of methods for determining the value of the natural gas system at Randolph AFB. Entex anticipates that the key factors in plant valuation will be physical condition, safety and environmental compliance, system throughput, and protective covenants related to curtailment or discontinuation of base operation. The company suggests providing potential bidders with detailed information about the existing systems to use in developing a proposed purchase price.

Philip Utilities Management Corporation. Philip Utilities indicates that it is willing to structure the purchase price to fit USAF's requirements. The company notes that a relatively high purchase price will result in higher rates, and a relatively low purchase price will result in lower rates.

Texas-New Mexico Power Company. TNMP indicates that the purchase price would depend primarily on the forecasted net cash flow, discounted at TNMP's weighted average cost of capital. Other considerations would include impacts on the company's other customers and on TNMP's strategic goals for expansion or for providing additional services. The purchase price would be calculated independently for each base.

U.S. Filter/Culligan Operating Services, Inc. and Morrison Knudsen Corporation. U.S. Filter-MK proposes to purchase the utility assets on a replacement-cost-new-less-depreciation (RCNLD) basis, with the cost of required upgrades and repairs to be deducted from the purchase price or reflected in the negotiated rates. They would perform an assessment of the utilities based on inventories provided by USAF and negotiate the purchase price based on the assessment, including negotiation of any discrepancies between the inventories and the assessment.

West Texas Gas, Inc. WTG indicates that the purchase price could be arrived at in several different ways, including capitalized earnings values, RCNLD, original book value, or fair market appraisal based on values used for property tax assessments.

2.6 Market Analysis Conclusions

The overall conclusions of the market analysis for Randolph AFB follow:

- Nine companies expressed interest in purchasing one or more of the utilities at Randolph AFB, and there are at least five interested respondents for each utility. Considerable competition for Randolph AFB utilities is therefore likely.
- Of the current local service providers, City Public Service (electric) expressed interest in acquiring all utility systems at Randolph AFB; the other current providers—PG&E Reata (natural gas) and Cibolo Creek Municipal Authority (wastewater)—did not express interest. Randolph AFB currently supplies its own water from local wells.
- Respondents demonstrated interest in a wide range of bundling options, ranging from a single utility at a single base to all utilities at all bases. Two interested providers for

Randolph AFB (SAWS and Entex) indicate that they would prefer to bundle the Randolph utilities with the other two San Antonio-area bases (Lackland and Brooks); the other interested providers propose to bundle the Randolph utilities with at least five other bases. None of the companies expressed interest solely in Randolph AFB.

- Companies not currently providing service to Randolph AFB propose developing new rates for on-Base service.
- Seven of the nine companies interested in Randolph AFB utilities address conjunctive
 metering or billing in their responses, and five of those companies express a willingness
 to consider conjunctive metering and billing.
- The nine interested companies provide some discussion of purchase price options. Some companies propose more than one option, and most of the companies' responses indicate flexibility in how a purchase price should be determined.

3.0 Operational Impact Analysis

The operational impact analysis at Randolph AFB indicates that, with control measures, all operational risks of utility privatization are within the Air Force risk tolerance. These risks therefore do not prohibit privatization. The approach taken to evaluate the potential impacts of utility privatization is discussed in Section 1.3. Key to this analysis was the determination of risks and measures to mitigate those risks. Following are the specific findings of the operational impact analysis at Randolph AFB.

3.1 Identification and Assessment of Risks

Risks were grouped into the following categories so that they could be evaluated and managed in groups. A more detailed documentation of the workshop results is provided in Volume II, Section 3.0, Appendix D.

- 1. Slower response time in a critical area increases risk of an accident and mission degradation. Slower response time in mission-critical areas (airfield) could cause an accident. Slower response times in critical situations could result in mission failure.
- **2. Fewer Base personnel reduce the Base's disaster and spill response ability**. With fewer overall Air Force personnel, when a disaster hits there would not be as much overall manpower to deploy. There is general concern about the reduction in staff that performs other critical functions on the Base, specifically for HAZMAT spills.
- **3.** Decrease in the ownership and control of the system leads to increased legal and environmental liability. The operator might own and operate the system to a low standard, but the Air Force might still retain some liability.
- **4. Privatization leads to loss of jobs**. Air Force personnel risk losing their jobs when privatization occurs.
- **5. Increasing the number of contractors on Base decreases security and increases the risk of an attack on the system.** The more contractors on Base, the more likely a mishap would occur. The Base treats its own water and thus opens itself up to attack by privatizing.
- **6. Possible operator default increases the risk of a system shutdown in the future**. Many factors could result in the new owner defaulting on the contract–market fluctuations, financial unsuitability, labor problems (strike). The result might be a shutdown of the utility system.

The results of the preliminary assessment are summarized in Table 3.1-1.

TABLE 3.1-1Preliminary Risk Evaluation
Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

Risk	Severity	Probability	Risk
Slower response time in a critical area increases risk of an accident.	Critical	Likely	High
Fewer Base personnel reduce the Base's disaster and spill response ability.	Marginal	Likely	Medium
Decrease in the ownership and control of the system leads to increased legal and environmental liability.	Marginal	Likely	Medium
Privatization leads to loss of jobs.	Marginal	Frequent	Medium
Increasing the number of contractors on Base decreases security and increases the risk of an attack on the system.	Critical	Seldom	Medium
Possible operator default increases the risk of a system shutdown.	Critical	Seldom	Medium

Slower response time to power outages in mission-critical areas was judged to be the highest risk if left unmitigated.

3.2 Identification and Evaluation of Mitigation Control Measures

The following is a compilation of the control measures identified in the workshops at all bases. All control measures might not be applicable or determined to be economically feasible at all bases. See Volume II, Section 3.0, Appendix D for a list of the specific control measures identified at the Base.

General

- Investigate the feasibility of not privatizing the airfield lighting where applicable.
 [Subsequent to the ORM Workshop, airfield lighting was removed from the privatization study.]
- Require Air Force approval of subcontractors.
- Require operator personnel to participate in training exercises.

Ensure Adequate Level of Service

- Require owner to operate from an on-base facility (mostly for electric systems).
 - Provide a direct Air Force to operator communication via a centralized utility service call for all utilities.
 - Include performance standards in the service agreement (such as maximum response times, purity of power, water quality). The Air Force has specified use

- of the response time requirements developed for Maxwell AFB as guidelines for this Feasibility Analysis; these are included in Volume II, Section 3.0.
- Include performance incentives and/or penalties in contracts (financial penalties if possible).
- Require the Base be a service priority over an operator's other systems.
 - Add additional emergency generators where operator's reliability is not certain and need is critical.
- Allow for QAE oversight of operator.
 - Ensure that the Base is a high priority for the operator (This might have an uncertain effect depending on the provider's other customers [e.g., hospital, city]).

• Guard Against Default

- Require stringent documentation of past performance, background, and financial capability.
- Include contract language to authorize the Air Force to operate and/or maintain the system in the event of a system shutdown, degradation, or national emergency. Include a release of liability.
- Include a no-strike clause in the contract.

• Limit Air Force Liability

- Add contract provisions to limit Air Force environmental liability due to operator negligence.
- Establish an environmental baseline to help limit Air Force liability.
- Transfer applicable environmental permits to operator.
- Require environmental audits and plans.
- Require approval of an O&M plan for the purchased system.
 - Establish a memorandum of agreement (MOA) with the state to legally site and fine the operator in case of violation.

• Minimize Job Loss Impact

Institute RIF planning, right of first refusal, PPPs, employee buyout/early retirement.

• Minimize Security Risk

Require background checks and security badges for operator's on-Base personnel.

- Provide safety and procedural training of operator's on-Base base personnel.
- Limit contractor access or provide escorts in controlled areas.

Based on the expected effect of all the control measures, the workshop team re-evaluated the risks using the sample risk matrix. The re-evaluation assumed that the control measures are taken, but did not assume they are necessarily successful. The objective was to estimate the effectiveness of taking available control measures.

The results of the re-assessment are shown in Table 3.2-1 and are documented in more detail in Volume II, Section 3.0, Appendix D.

TABLE 3.2-1Risk Evaluation with Control Measures
Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

Risk	Severity	Probability ^a	Risk ^a
Slower response time in a critical area increases risk of an accident.	Critical	Seldom	Medium
Fewer Base personnel reduce the Base's disaster and spill response ability.	Marginal	Occasional	Medium
Decrease in the ownership and control of the system leads to increased legal and environmental liability.	Marginal	Seldom	Low
Privatization leads to loss of jobs.	Marginal	Likely	Medium
Increasing the number of contractors on Base decreases security and increases the risk of an attack on the system.	Critical	Seldom	Medium
Possible operator default increases the risk of a system shutdown.	Critical	Seldom	Medium

^a Italicized items denote changes from initial assessment without control measures.

The results show that, with control measures, impacts can be mitigated to the medium to low classification. Decisionmakers at the appropriate level will choose the appropriate controls based on the analysis of overall costs and benefits. When the costs outweigh the benefits, some risk might be accepted. Ultimately, the control measures implemented in the real estate instruments and utility service contract will be reflected in the contract cost and the determination of the privatization project's economic viability.

Privatization hazards not related to the listed severity categories were also discussed at the workshops (Volume II, Section 3.0, Appendix E). These issues and impacts will be addressed in other steps of privatization assessment.

3.3 Conclusions

The following component agencies of the Base were missing from the ORM workshop: operations, security assistance training, supply, maintenance, communication, AFPC, and SG (Volume II, Section 3.0, Appendix C). Results of the workshop indicate that, with control measures, all risks would be considered within the Air Force tolerance for privatization risk and not prohibit privatization at the base.

Without any control measures in place, the slower response time to power outage at the airfield and during emergency/readiness situations was the lone risk that fell into the high-risk category. The workshop team concluded that, with control measures, this risk could be mitigated to an acceptable level.

The primary control measures needed to mitigate the highest risks include the following:

- Do not privatize the airfield lighting. [Subsequent to the ORM Workshop, airfield lighting was removed from the privatization study.]
- Include performance standards in the service agreement (maximum response times, purity of power, water quality).
- Include performance incentives and/or penalties in contracts (financial if possible).
- Require stringent documentation of past performance, background, and financial capability.

4.0 Regulatory Overview

This section presents an overview of regulatory issues with respect to utilities privatization at Air Force bases in Texas. The discussion addresses:

- State and municipal regulation of utilities in Texas (Section 4.1).
- The potential effect of the "federal enclave" doctrine on utilities privatization within Air Force bases (Section 4.2).
- A summary of findings with respect to Randolph AFB (Section 4.3).

Conclusions regarding the individual utilities at Randolph AFB are presented in the utility-specific sections of this report (Sections 5.0 through 8.0).

This overview summarizes the results of research and analysis performed by Davidson & Troilo, P.C.; their detailed report for all seven TRD bases is presented in Volume II, Section 4.0. This information is based on current applicable legal authorities; however, future court decisions, legislation, and other relevant developments may change this information and affect utilities privatization in Texas.

4.1 Utility Regulation in Texas

The utilities proposed for privatization are regulated by three different state agencies:

- Electricity: Public Utility Commission of Texas (PUCT)
- Water and wastewater: Texas Natural Resource Conservation Commission (TNRCC)⁴
- Natural gas: Railroad Commission (RRC)

Municipalities also hold regulatory authority over utilities offering service within their corporate limits, but this jurisdiction is limited and may be subject to review by the appropriate state regulatory agency.

The following subsections describe the state and municipal regulatory framework for each utility.

4.1.1 Electricity

Jurisdiction

The PUCT and local municipalities regulate electric utilities pursuant to Title II, Subtitles A and B, of the Texas Utilities Code. Some municipalities have regulatory jurisdiction within their municipal limits; the PUCT has jurisdiction outside a municipality's limits. Regulatory authority therefore varies depending on whether a particular base or portion of a base is

⁴ The TNRCC regulates the provision of potable water service, so chilled water or steam systems are not subject to TNRCC regulation.

located within municipal limits. This issue is further affected by the federal enclave doctrine, discussed below in Section 4.2.

Regulatory jurisdiction also depends on the nature of the utility service provider. The PUCT regulates investor-owned utilities. Electrical cooperatives may remove themselves from PUCT jurisdiction, but may in some cases be subject to PUCT rate regulation (see "Rate Regulation," below). Municipally owned utilities are not subject to PUCT regulation, but also may in some cases be subject to PUCT rate regulation (see "Rate Regulation"). Wholesale providers are exempt from PUCT regulation.

The PUCT recently decided that three U.S. Naval stations are eligible to change their customer status from retail to wholesale.⁵ In an order signed on February 2, 1999, the commissioners concluded that the Navy met the threshold requirements for classification as a wholesale customer because it exhibits the attributes of a wholesale purchaser of electricity. Although not required by commission practice, the commissioners heard several motions to reconsider the February 2 order at their March 11 open meeting. After a brief discussion of the issues, the commissioners rejected all of the arguments presented except for a partial change concerning the definition of sales. In the original order, intra-Navy transfers were considered to be sales. Upon reconsideration, the commissioners clarified that sales do not include transfers between Navy units. A minor evidentiary error also was corrected. All other points for reconsideration were denied. Consequently, the March 16th order on reconsideration does not change the underlying reasoning of the original order. Other questions and the impact of the order in Phase One will be considered in the Phase Two proceeding before the State Office of Administrative Hearings.

In 1999, Texas enacted electric utility deregulation legislation (Texas Utilities Code Section 32.060). Among its components, the legislation provides some restriction to shifting the status of customers from retail to wholesale. Specifically, the PUCT is prevented from converting a retail customer into a wholesale customer in areas served by a municipal electric utility that does not allow its retail customers access to other power supplies. As described in Section 2.0, Randolph AFB currently purchases its power supply from CPS, a municipal utility. As a result, Randolph may be restricted from purchasing power in wholesale markets until CPS decides to offer such access. (A memorandum by John Laakso on the Texas deregulation legislation is provided in Volume II, Section 4.0.)

However, if Randolph were to privatize its electric utility system, it may be able to obtain access to wholesale markets by forming a strategic partnership with the new owner of its electric system. If that new owner could qualify as an electric utility, it would have access to wholesale markets. The new owner could then effectively act as the Base's agent in obtaining wholesale power supplies in competitive markets.

Service Areas

In order to provide electrical service to a particular geographic area, an electric utility must obtain a certificate of convenience and necessity (CCN) for that area from the PUCT. The PUCT will grant a CCN if it is necessary for the service, convenience, accommodation, service or safety of the public. The PUCT can consider many factors in deciding whether to

⁵ PUCT Docket No. 17180, filed March 11, 1997.

grant a CCN, such as the utility's ability to provide service, the adequacy of existing service, the need for additional service, impact on other utilities, environmental concerns, service improvement, and reduced cost to consumers. As part of obtaining a CCN, a retail electric utility must also acquire all franchises or other permits from municipalities or other public authorities.

The Texas constitution does not allow the state to create monopolies. Accordingly, exclusive CCNs are not allowed in Texas. Therefore, a CCN does not create an exclusive right to serve the area; other utilities or even non-utilities can request and obtain a CCN in an area already receiving service. Two or more CCN holders can compete for retail customers within the same certificated area. CCN maps and county files indicate that all seven TRDP bases are within the certificated territories of existing electric utilities. Regulatory jurisdiction will have to be decided on a case-by-case basis.

The intent of this general constitutional rule has been contraverted by electric utility deregulation legislation mentioned above (Texas Utilities Code Section 32.060). This legislation provides that for the period September 1, 1999, through January 1, 2002, the PUCT is restricted from granting new CCNs in existing service areas under most circumstances. Under these circumstances, the legislation creates a de facto monopoly for utilities in areas where they hold the only existing CCN. This legislative restriction is extended indefinitely for the service areas of municipally owned utilities that choose not to offer their customers access to other power supplies when allowed by the deregulation legislation beginning on January 1, 2002.

However, as described in the John Laakso memorandum included in Volume II, Section 4.0, Texas Utilities Code Section 32.060 does not restrict the PUCT from granting CCNs at Air Force bases in Texas. This is because maintenance of an exclusive CCN requires an ability of the CCN holder to serve the area in question. Since the existing CCN holder would not have access to the base, it would not be able to demonstrate this ability. Accordingly, the successful bidder for the Air Force electric utility system would be able to demonstrate an ability to serve and would likely be awarded a CCN for the base.

Rate Regulation

The PUCT regulates different types of electric utilities to different degrees depending on the utility's ownership status and type of activity. The PUCT reviews investor-owned utility rates under a full cost-of-service standard, and their rates are normally set through a formal procedure that requires a notice of intent to change rates, filing a rate package, and an opportunity for a hearing. Cooperatives have discretion as to how they will handle rate regulation. A cooperative may remove itself from PUCT jurisdiction, but is still subject to filing rate tariffs. In addition, the PUCT may review a cooperative's rates if cooperative members or an affected electric utility file a complaint, or if the cooperative is collecting excessive revenues. Municipally owned utility rates are reviewed by the PUCT only if there is an appeal by ratepayers who do not reside within the municipality's boundaries. Wholesale providers are exempted from PUCT rate regulation.

A regulated electric utility provider cannot charge a rate that has not been filed as a tariff with the PUCT. However, the extensive rate regulation procedures apply to rate changes.

Thus, new rates would have to be filed as tariffs, but not necessarily reviewed before the new owner began operating the system.

Custom rates may be established if there is a reasonable basis to do so. The PUCT has approved custom rates many times when the parties have agreed on the rates.

Sales Price

Electric utilities that are regulated by the PUCT are required to report a system purchase to the PUCT. The PUCT does not have authority to prohibit a sale, but may find that the transaction is not consistent with the public interest. In this case, the PUCT will take the effect of the transaction into consideration in the next ratemaking proceeding and disallow any unreasonable impacts on rates or service.

When the PUCT sets rates, it must establish the original cost of invested capital. Rates must be based on original cost less depreciation. The PUCT is reluctant to include payments above actual cost unless there is good cause to do so. The concept used to analyze inclusion of a premium payment is referred to as "acquisition adjustment." The PUCT will determine whether the purchase price was excessive and then consider if there are offsetting benefits accruing to ratepayers. If an acquisition adjustment is allowed, it will be recovered by amortizing the amount over the life of the plant purchased.

Service Standards and Design/Operational Requirements

The PUCT has established performance standards and incorporated standards adopted by the utilities. Because the PUCT has broad authority, it can investigate specific safety or other system configuration issues if they arise.

The PUCT rules generally govern typical electric utility practices related to customer relations, new service, deposits, billing, meters, and discontinuance of service. The PUCT has not adopted rules to protect electric customers from abusive competitive practices, but will do so as retail competition develops. Because of recent outages and reduced services due to increased competition and merger activity, the PUCT recently adopted new quality of service operation rules such as new standards for an emergency operation plan and system-wide and distribution feeder reliability.

Metering Options

There appear to be several metering options that would be acceptable to the PUCT. The Air Force and the owner of the privatized electric distribution system might negotiate a service arrangement under which any of the following options are likely to be acceptable to the PUCT:

- 1. Standard Metering. This would consist of metering electric usage at each facility on Base. Normally, this would imply that the rate charged for distribution service on Base would be based on kilowatt (kW) demand and kilowatt-hour (kWh) usage. Reasons for seeking this option include:
 - Electric rates are normally based largely on kW demand and kWh usage at the point of service delivery. Given its traditional industry practice, the PUCT would accept such a metering option and likely accept the associated rate structure.

- Such metering would provide incentive for the distribution system owner to reduce losses on the system. This in turn would reduce the Air Force's cost of power supply.
- Metered data for individual facilities would be useful to the Base's energy management program.

Reasons for not seeking this option include:

- Metering is an extra expense that would naturally be borne by the Air Force.
- The cost of owning, operating, and maintaining an electric distribution system is largely fixed and therefore does not vary according to electrical usage. Given the possibility that electrical usage will change with time, this creates a potential disconnect between the utility's costs and revenues if rates are based on kWh usage. This disconnect increases risk for both the owner and the Air Force. The owner will include consideration of this risk in its rates to the Air Force, thereby increasing the Air Force's cost.
- 2. Master Metering. This would consist of metering the base's overall usage and submetering individual facility uses only as necessary to meet the Air Force's need for data. Normally this would imply that the rates charged would be a fixed monthly rate. On the other hand, it could also include a rate based on kW demand and kWh usage. This would be the same as the emerging practice of "conjunctive billing" whereby the uses at individual facilities are aggregated into a total amount and billed as a single use. Master metering is an accepted practice for apartment buildings in Texas and is regulated by the PUCT and state statute. In addition, there is PUCT precedent for acceptance of conjunctive billing. Taken together, it appears that master metering and conjunctive billing would be an option for privatized electric distribution service to the Base. Reasons for seeking this option include:
 - The Air Force could avoid the cost of adding meters to the distribution system.
 - The Air Force might get a rate break from conjunctive billing.

Reasons for not seeking this option include:

- As noted above, the cost of owning, operating, and maintaining an electric
 distribution system is largely fixed and therefore does not vary according to
 electrical usage. It is assumed that a master metered arrangement would be based on
 a rate charged against electrical usage. This would create extra risk and costs for the
 Air Force as noted above.
- The incentive for the owner to reduce losses would be less than if end uses were metered. However, some incentives based on loss surveys could be built into the contract with the new owner.
- 3. No Metering. Given that the cost of owning, operating, and maintaining an electric distribution system is fixed, it would be logical to establish a rate based on these fixed costs. A fixed monthly rate for on-Base distribution service would not require metered usage data. (The Air Force might meter some uses for its own purposes.) Based on discussion with the PUCT, it is likely that this option would be acceptable to the PUCT

assuming that the arrangement would not affect parties other than the new owner and the Air Force. Reasons for seeking this option include:

- The Air Force could avoid the cost of adding meters to the distribution system.
- The new owner of the distribution system would not have the risk that losses would likely develop if electric loads on the system were to be reduced in the future. Likewise, the Air Force would not have the risk that costs would increase with increased loads in the future. These risk reductions would result in lower costs to the Air Force.

A reason for not seeking this option is as follows:

• The incentive for the owner to reduce losses would be less than if end uses were metered. However, some incentives based on loss surveys could be built into the contract with the new owner.

4.1.2 Water and Wastewater

Jurisdiction

The TNRCC regulates the services, rates, design, and operation of water and sewer utilities. The extent to which the TNRCC regulates a water or wastewater utility depends upon the nature of the utility's ownership. Investor-owned utilities are extensively regulated; a member-owned system is subject to somewhat less regulation; and a publicly owned system is subject to limited jurisdiction. However, the TNRCC design and operational standards apply regardless of the nature of the utility's ownership.

Regulatory jurisdiction also depends on whether the purchaser is currently regulated, and the extent to which the federal enclave doctrine applies (see Section 4.2, below). If an existing investor-owned utility purchased the system, the TNRCC would regulate the utility's rates and service. A newly formed investor-owned utility or a non-regulated subsidiary of an existing regulated utility, however, may not be subject to regulation if the federal government retains exclusive jurisdiction over the utility system assets (Section 4.2).

Service Areas

The TNRCC regulates the service areas of all water and wastewater utilities by the issuance of a CCN. Municipalities do not regulate water/wastewater service areas.

A publicly owned utility is not required to obtain a CCN unless another water/wastewater utility holds a CCN for the area or is already actually serving the area. A utility regulated by the TNRCC must obtain a CCN prior to initiating service within an area unless: (1) it serves less than 15 potential connections and is not within the certificated area of another utility; or (2) its service will extend less than a quarter-mile into contiguous territory not within the service area of another utility. Under the 15-connections rule, an investor-owned utility could argue that an Air Force base is one connection, regardless of the number of on-base buildings served, and if the utility's system had less than 14 other connections it could qualify for CCN exemption.

Despite CCN regulations preventing dual certification of water/wastewater service areas, a utility could likely obtain a CCN for an Air Force base that is within another utility's certificated area. If the existing utility opposed the CCN application, both utilities would have to prove their respective abilities to serve the areas. The existing utility would have to demonstrate its ability to extend its system onto land owned and controlled by the Air Force; this would be difficult, if not impossible. On the other hand, the utility purchasing the Air Force system would be able to demonstrate that it owns, or has access to, the base utility distribution system; this would enable the utility to satisfy its obligations under the CCN. Utilities may also agree on service areas and customers, but such agreements must be approved by the TNRCC.

Texas water/wastewater CCN maps indicate that the TRDP bases differ with respect to proximity to CCN areas. Service area regulatory jurisdiction will have to be decided on a case-by-case basis.

Rates and Sales Price

The TNRCC regulates water and sewer rates in Texas, with the following limitations:

- 1. Rates charged by publicly owned and member-owned utilities are self regulated. TNRCC regulation is limited to responding to issues raised when a requisite number of affected customers file a complaint.
- 2. Within city limits, original jurisdiction for rates charged by investor-owned utilities resides with the municipal government. However, all parties, including the utility service provider, have the right to appeal rate decisions by municipalities to the TNRCC.

The TNRCC generally regulates the sale or lease of utility facilities by requiring prior notice and opportunity for review and approval; however, because the Air Force is not required to hold a CCN, the TNRCC will not have to approve the sale of the system.

If the purchaser is an investor-owned utility, the TNRCC would add the system assets to the utility's rate base at the original cost less depreciation; if the Air Force does not have this information, the original cost would be developed by trending. The TNRCC may also allow an acquisition adjustment. If the purchaser is a publicly owned or member-owned utility, the TNRCC does not review the rate. Most publicly owned utilities are on a cash basis for accounting, so the value of the rate base is not as critical as the method of financing. The law prohibits preferential rates, but an opportunity still is present to develop a rate for the Air Force if based upon reasonable distinctions.

Service Standards and Design/Operational Requirements

The TNRCC or a municipality may set service standards applicable to investor-owned utilities. Water and wastewater systems, regardless of the nature of ownership, must satisfy the minimum design and operational requirements set by the TNRCC.

Metering Options

The TNRCC typically requires a meter for each service connection, but might grant exceptions to this rule if the exception does not compromise health, service, or water quality. For water service, the TNRCC appears willing to allow any of the three metering

options outlined above for electric distribution service (metering at each facility, master metering, or no metering). For wastewater service, the TNRCC normally encourages, but does not require, billing based upon metered water usage. For an on-Base collection system, it would likely allow billing based on water usage at each facility, master metering (like that currently in place for wastewater discharge from the Base), or rates based on a single monthly charge without reference to metered usage.

Discharge Permits

The TNRCC is responsible for issuing both federal and state permits for wastewater treatment facilities, and may designate a regional wastewater provider for an area that encompasses multiple water supply CCNs. The TNRCC may require any wastewater utility to discharge to the regional system.

4.1.3 Natural Gas

Jurisdiction

The RRC regulates gas utilities pursuant to the laws in Titles 3 and 4 of the Texas Utilities Code. The RRC regulates investor-owned utilities that distribute natural gas outside a municipality; it does not regulate or supervise rates or services by a municipally owned utility. A member-owned, non-profit corporation would be regulated in the same manner as an investor-owned utility.

Service Areas

Unlike electric and water/wastewater utilities, the RRC does not regulate gas service areas. Since the state has not preempted local authority to designate service areas, a municipality may retain some authority to authorize service within its corporate limits. If a city operates its own gas distribution system, it could prohibit competing gas utilities from using its streets in order to provide service, but this power is limited within Air Force bases if the federal government, not the city, owns and controls the on-base streets. However, if the city has granted a franchise to a non-city-owned gas utility, the city cannot prevent another gas utility from using city streets because the city cannot grant an exclusive franchise or exclusive street-use rights to a single provider. The RRC's most recent annual report lists the gas utility serving each Texas city, and in no case were two utilities shown to be providing service within the same city.

Gas supplies are deregulated in Texas in that large customers can purchase gas from wholesale suppliers and have the gas delivered through the local distribution system.

Rates and Sales Price

The RRC may establish and set the rates of investor-owned and member-owned gas utilities. Publicly owned utilities are not subject to RRC rate regulation.

An investor-owned gas utility must file a rate schedule as a tariff with the RCC, and may not grant an unreasonable preference or advantage concerning rates or services to a customer in a particular classification. If a complaint is filed, the RCC determines whether the rate is in accordance with the filed tariff, and whether the rate is the same for similar customers.

The RRC must approve the acquisition of a plant as an operating unit or system for a total consideration of more than \$200,000, or the merger or consolidation with another gas utility operating within the state. For rate-making purposes, the RRC would use the Air Force's original cost less depreciation, but will allow an acquisition adjustment when justified.

Service Standards and Design/Operational Requirements

The RRC is authorized to adopt standards regulating the quality of service. It has adopted service standards applicable to residential and small commercial customers, but does not define the term "small commercial customer." The RRC has historically not inspected or regulated gas distribution lines or services within Air Force bases.

Metering Options

The discussion of this issue relative to electricity and water also applies to gas. That is, the RRC would likely allow billing for gas distribution on Base to be based on three metering options: metering of uses at individual facilities on Base, master metering, or no metering at all. For more discussion of these options, see the metering subsection under Section 4.1.1.

In addition to using meters as a billing method, the RCC uses meters as the major method of determining the integrity of the gas pipeline system. Without a method to account for gas deliveries, the RRC might require an alternative plan to routinely demonstrate the integrity and the safety of the gas pipeline.

4.2 The Federal Enclave Doctrine

The extent to which state regulatory authority may affect utilities privatization at a particular TRDP base depends upon:

- Whether the base is a federal enclave and the extent of exclusive federal jurisdiction; and
- Whether the state regulatory authority, or unsuccessful bidders, accept that state jurisdiction within the base is limited under the federal enclave doctrine.

The federal government may acquire jurisdiction over state land that it acquires, such as land used for military installations. If land is acquired with federal jurisdiction, the area becomes a "federal enclave." The state ceding jurisdiction to the federal government cannot exercise its jurisdiction over a federal enclave except as was reserved at the time the land was ceded, or as was rescinded by subsequent federal action. State or local laws that were in effect at the time the federal government acquired the property may continue in force if they are not inconsistent with federal law. The deed of cession controls the original character of the jurisdictional transfer. In Texas, the Government Code contains general provisions governing such a transfer.

The federal government may have exclusive, concurrent, or proprietary jurisdiction over a federal enclave:

• *Exclusive jurisdiction* applies when the federal government possesses all of the authority of the state, and the state has not reserved to itself the right to exercise any authority

concurrently with the federal government other than the right to serve civil or criminal process in the federal enclave for actions that occurred outside the federal enclave.

- *Concurrent jurisdiction* applies when the state reserves to itself the right to exercise, concurrently with the federal government, all of the same authority.
- *Proprietary jurisdiction* applies when the federal government has acquired some right or title to an area in the state, but has not obtained any measure of the state's authority over the area.⁶

All three of these jurisdictional levels may be present on a single Air Force base. This situation can exist because the land was acquired at different times with different operative language or laws, or because of a partial recession of federal jurisdiction by deed or act of Congress. The nature of the jurisdiction at a particular Air Force base therefore must be established in detail.

Previous court cases involving the sale or regulation of utilities at military installations have addressed aspects of the federal enclave doctrine:

- The California Public Utility Commission concluded in 1997 that the sale of military land and gas utility assets at Mather Field, California terminated federal exclusive jurisdiction. However, the rescinded land and utility assets were not retroactively incorporated into a prior CCN issued to a utility provider for the entire county since the Commission had no power to grant a CCN for Mather Field at the time that the CCN was issued.
- In *Black Hills Power and Light Company v Weinberger* (1987), the Eighth Circuit Court concluded that a state commission could not regulate the sale of electricity within Ellsworth AFB (i.e., there was no concurrent federal and state jurisdiction with respect to utility regulation).
- Congress enacted legislation to prohibit federal agencies from purchasing electricity in a manner inconsistent with state law; however, the Eighth Circuit found that this legislation did not extend state jurisdiction to federal enclaves since Congress failed to specify "federal enclave."
- The manner in which an Air Force base's utilities are purchased may also affect regulatory jurisdiction. Payment may be received as a reduction in rates; however, any such rate reductions would be subject to state rate regulation.

The <u>Black Hills</u> decision and federal law suggest that state law may not have authority to regulate either the sales transaction or subsequent sale of electricity to areas of an Air Force base subject to exclusive federal jurisdiction. However, an Eighth Circuit decision does not bind Texas regulatory authorities or the Fifth Circuit, and while state regulation may not reach activities of the Air Force, it is unclear as to whether a purchaser of a utility system will be also exempt from state jurisdiction.

⁶ It should be recognized that the federal government, by virtue of various provisions of the Constitution, has many powers and immunities not possessed by ordinary landholders with respect to areas in which it acquires an interest. It should also be recognized that the federal government holds all of its properties and performs all of its functions in a governmental, rather than proprietarial, capacity.

Once the Air Force base utilities are acquired or operated by someone other than the federal government, each affected state regulatory authority will need to determine, probably on a case-by-case, basis, whether the federal enclave doctrine applies. A situation could occur in which the affected state agencies disagree on the applicability of the doctrine. The issue will ultimately need to be resolved by Congress, or by either the Texas Legislature or by a decision made or recognized by the Texas Supreme Court. Until resolved, prospective purchasers may not know precisely the extent to which state regulatory authorities can or will exercise jurisdiction. Each bid therefore should be analyzed on the assumption that some or all of the transaction might be subject to state regulation.

4.3 Regulatory Overview for Randolph AFB

Based on the findings of this regulatory analysis, all utilities proposed for privatization at Randolph AFB are open to competitive bidding.

Randolph AFB is not located within the corporate limits of the City of San Antonio or the City of Universal City, according to each city's planning department. All of the Base is shown to be subject to exclusive federal jurisdiction except the following: the southern ends of both runways, the southern half of the golf course, and a relatively small area located northeast of the north end of the eastern runway are shown to be subject to proprietary jurisdiction; and the approaches to both ends of both runways are shown to be subject to concurrent jurisdiction (see map in Volume II, Section 4.0). The Base also has the following relationships to existing utilities and service areas:

- Electric: the Base is included within an electric CCN held by CPS (a municipally owned utility)
- Natural gas: the Base is not located within any city's corporate limits
- Water: the Base is not included within any CCN, but is located adjacent to water CCNs held by the City of Converse and the City of Schertz
- Wastewater: the Base is not included within any CCN

The regulatory implications of the Base's location with respect to existing CCNs and city corporate limits, as well as the implications of exclusive federal jurisdiction, differ for each utility and are discussed in Sections 5.0 through 8.0.

5.0 Electrical System Analysis

5.1 System Overview

5.1.1 Description

City Public Service of San Antonio (CPS) supplies electrical power to Randolph AFB through four underground, 13.8-kilovolt (kV), three-phase distribution circuits from the CPS Randolph Field Substation. These four circuits feed the main switching station located in the north portion of the Base. This switching station feeds four other switching stations (north, south, east, and west), the Wherry Housing areas, and the clinic.

The distribution system consists of approximately 195,000 linear feet (lf) of three-phase, four-wire line rated at 15 kV. The main station feeds the substations through underground, concrete-encased ductbank feeders. The distribution feeders and branch circuits from the substations are also underground. The distribution feeders provide service to pad-mounted distribution transformers (216 three-phase and 69 single-phase), nearly all of which are metered. Capacitor banks are installed at each of the four distribution switching stations; however, the capacitors are not necessary to maintain system voltage. The system also includes:

- 290 utility poles
- 135 switches (3- and 4-way)
- 387 utility vaults
- 290 streetlight fixtures

Section 5.1.2 presents a detailed inventory of the electrical system.

The Base also maintains 43 systems to provide backup power to mission-critical facilities. These backup systems incorporate 31 real property systems at 29 different sites and 12 portable emergency systems.

All of the Base switching stations are housed in steel buildings. The main, east, and west switching stations were constructed in the 1970s; the north and south stations were constructed in the 1980s. Many of the circuits were constructed in the 1970s, although some were replaced in the 1980s and 1990s. Construction dates for the other system components range from the 1970s to the 1990s. The electrical distribution system appears to be in good condition, and no deficiencies or code violations were observed during the site visit. The Base is currently replacing all of the system's lead-insulated cable; most of it has already been replaced.

5.1.2 Inventory and System Value

Table 5.1.2-1 presents an inventory of the electric utility system, together with estimated system value in terms of replacement costs and depreciation rates. The inventory is based on "take-off" calculations for the system components summarized above in Section 5.1.1.

TABLE 5.1.2-1
Electric Utility Inventory
Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

ltem	Size	Quantity	Unit	Approximate Year of Construction	Design Life (Years)	Estimated Unit Cost (\$)	RCN (\$)	RCNLD (\$)	Cost to Remedy Current Deficiencies (\$)	Depreciation Rate (%)	Weighted Depreciation Rate (%)
Substations											
South		1	EA	1985	30	374,000	374,000	199,467	-	3.3%	0.0805%
East		1	EA	1975	30	238,000	238,000	47,600	-	3.3%	0.0512%
West		1	EA	1975	30	238,000	238,000	47,600	-	3.3%	0.0512%
North		1	EA	1985	30	374,000	374,000	199,467	-	3.3%	0.0805%
Main		1	EA	1975	30	306,000	306,000	61,200	-	3.3%	0.0659%
Underground Circuits	AWG	Length (ft)									
3ph, 4w, 15000V, in conduit	#2	14,645	LF	1995	50	19	277,410	255,217	-	2.0%	0.0358%
3ph, 4w, 15000V, in conduit	#1	39,889	LF	1995	50	21	831,004	764,523	-	2.0%	0.1073%
3ph, 4w, 15000V, in conduit	#500	12,315	LF	1995	50	40	489,777	450,595	-	2.0%	0.0632%
3ph, 4w, 15000V, in conduit	#4/0	31,155	LF	1985	50	25	783,978	564,464	-	2.0%	0.1012%
3ph, 4w, 15000V, in conduit	#500	7,850	LF	1985	50	40	312,201	224,785	-	2.0%	0.0403%
3ph, 4w, 15000V, in conduit	#1	4,050	LF	1975	50	21	84,373	43,874	-	2.0%	0.0109%
3ph, 4w, 15000V, in conduit	#2/0	13,225	LF	1975	50	24	313,073	162,798	-	2.0%	0.0404%
3ph, 4w, 15000V, in conduit	#4/0	61,697	LF	1975	50	25	1,552,531	807,316	-	2.0%	0.2005%
3ph, 4w, 15000V, in conduit	#500	5,450	LF	1975	50	40	216,751	112,710	-	2.0%	0.0280%
3ph, 4w, 15000V, in conduit	#750	4,460	LF	1975	50	53	236,488	122,974	-	2.0%	0.0305%
Transformers	Nom kVA	No.									
3-Phase	45	7	EA	1995	35	1,500	10,500	9,300	-	2.9%	0.0019%
3-Phase	75	3	EA	1995	35	1,500	4,500	3,986	-	2.9%	0.0008%
3-Phase	112.5	5	EA	1995	35	3,000	15,000	13,286	-	2.9%	0.0028%
3-Phase	150	3	EA	1995	35	3,000	9,000	7,971	-	2.9%	0.0017%
3-Phase	225	31	EA	1995	35	4,000	124,000	109,829	-	2.9%	0.0229%
3-Phase	300	4	EA	1995	35	4,000	16,000	14,171	-	2.9%	0.0030%
3-Phase	500	1	EA	1995	35	7,000	7,000	6,200	-	2.9%	0.0013%
3-Phase	1500	1	EA	1995	35	20,000	20,000	17,714	-	2.9%	0.0037%
3-Phase	75	24	EA	1985	35	1,500	36,000	21,600	-	2.9%	0.0066%
3-Phase	113	13	EA	1985	35	3,000	39,000	23,400	-	2.9%	0.0072%
3-Phase	150	3	EA	1985	35	3,000	9,000	5,400	-	2.9%	0.0017%
3-Phase	225	1	EA	1985	35	4,000	4,000	2,400	-	2.9%	0.0007%
3-Phase	300	13	EA	1985	35	4,000	52,000	31,200	-	2.9%	0.0096%
3-Phase	500	9	EA	1985	35	7,000	63,000	37,800	-	2.9%	0.0116%
3-Phase	750	2	EA	1985	35	10,000	20,000	12,000	-	2.9%	0.0037%
3-Phase	45	3	EA	1975	35	1,500	4,500	1,414	-	2.9%	0.0008%
3-Phase	75	15	EA	1975	35	1,500	22,500	7,071	-	2.9%	0.0042%
3-Phase	112.5	8	EA	1975	35	3,000	24,000	7,543	-	2.9%	0.0044%
3-Phase	150	13	EA	1975	35	3,000	39,000	12,257	-	2.9%	0.0072%
3-Phase	225	15	EA	1975	35	4,000	60,000	18,857	_	2.9%	0.0111%
3-Phase	300	19	EA	1975	35	4,000	76,000	23,886	_	2.9%	0.0140%
3-Phase	500	18	EA	1975	35	7,000	126,000	39,600	_	2.9%	0.0232%
3-Phase	750	2	EA	1975	35	10,000	20,000	6,286	-	2.9%	0.0232%
3-Phase	1000	2	EA	1975	35	15,000	30,000	9,429	_	2.9%	0.0055%
0 1 11036	1000	2	L/\	1373	55	15,000	30,000	3,423	_	2.070	0.000070

3-Phase	1500	1	EA	1975	35	20,000	20,000	6,286	-	2.9%	0.0037%
1-Phase	15	1	EA	1995	35	500	500	443	-	2.9%	0.0001%
1-Phase	25	6	EA	1995	35	500	3,000	2,657	-	2.9%	0.0006%
1-Phase	37.5	3	EA	1985	35	700	2,100	1,260	-	2.9%	0.0004%
1-Phase	15	1	EA	1975	35	500	500	157	-	2.9%	0.0001%
1-Phase	25	3	EA	1975	35	500	1,500	471	-	2.9%	0.0003%
1-Phase	37.5	3	EA	1975	35	700	2,100	660	-	2.9%	0.0004%
1-Phase	50	10	EA	1975	35	700	7,000	2,200	-	2.9%	0.0013%
1-Phase	75	9	EA	1975	35	900	8,100	2,546	-	2.9%	0.0015%
1-Phase	100	21	EA	1975	35	1,100	23,100	7,260	-	2.9%	0.0043%
1-Phase	250	12	EA	1975	35	1,900	22,800	7,166	-	2.9%	0.0042%
Utility Poles	Height (ft)	No.									
	Other	290	EA	1975	35	1,399	405,826	127,545	-	2.9%	0.0749%
Switches	Type	No.									
	3-Way	7	EA	1995	30	13,875	97,125	84,175	-	3.3%	0.0209%
	4-Way	12	EA	1995	30	17,427	209,124	181,241	-	3.3%	0.0450%
	3-Way	15	EA	1985	30	13,875	208,125	111,000	-	3.3%	0.0448%
	4-Way	20	EA	1985	30	17,427	348,540	185,888	-	3.3%	0.0750%
	3-Way	45	EA	1975	30	13,875	624,375	124,875	-	3.3%	0.1344%
	4-Way	36	EA	1975	30	17,427	627,372	125,474	-	3.3%	0.1350%
Vaults	Type	No.									
	Utility	164	EA	1995	50	12,614	2,068,696	1,903,200	-	2.0%	0.2671%
	Utility	68	EA	1985	50	12,614	857,752	617,581	-	2.0%	0.1108%
	Utility	155	EA	1975	50	12,614	1,955,170	1,016,688	-	2.0%	0.2525%
Lighting	Type	No.									
	Street	290	EA	1975	20	560	162,400	0	-	5.0%	0.0524%
SUBTOTAL							15,487,791	9,215,431	-		2.4509%
General Requirements		15	%				2,323,169	1,382,315	-		
SUBTOTAL							17,810,959	10,597,746	-		
Contingency ^a		5	%				890,548	529,887	-		
CONSTRUCTION TOTAL							18,701,507	11,127,633	-		
Engineering		10	%				1,870,151	1,112,763	-		
Services During Construction		6	%				1,122,090	667,658	-		
TOTAL							21,693,749	12,908,054	-		

a 10 percent contingency used to remedy any current deficiencies.

Costs estimated at order of magnitude level. RCN = replacement cost new AWG = American Wire Gauge ea = each

Nom kVA = nominal kilovolt-amperes

w = wire

ch or foot

ph - phase V = volts

RCNLD = replacement cost new less depreciation If = linear feet V = v

Section 1.3 describes the approach to these calculations. Unit costs for each line item were then estimated based on a combination of the sources listed in Section 1.3.6.

This system inventory yields a calculated RCN value of approximately \$21,693,749 (see Table 5.1.2-1). Based on an estimate of installation dates and useful life for this type of equipment, the calculated RCNLD is approximately \$12,908,054.

5.2 Utility Requirements Assessment

5.2.1 Current and Future Electrical Demand

Annual electric power consumption at Randolph AFB is approximately 3.5 million kilowatthours (kWh). The peak demand during FY98 was approximately 18 megawatts (MW), occurring in July, August, and September.

As noted in Section 1.2, key projects planned for Randolph AFB will increase the total square footage of buildings on Base by less than 1 percent. Based on these plans, and given the ongoing energy conservation program at the Base, the current peak demand of 18 MW was also used to evaluate the system's future capacity requirements.

5.2.2 System Capacity

Based on the current and projected future peak demand of 18 MW, the system appears to have excess capacity. The 1993 power system study by Alexander Utility Engineering Inc. indicates that the load on each feeder circuit less than the circuit's capacity (the applicable table from the Alexander study is provided in Volume II, Section 5.0). This, and the fact that nearly every main feeder runs between two switching stations, provides loop feed capability and a high degree of reliability and flexibility.

The switchgear located at the switching stations appears to be full with no room for additional circuit breakers for any new circuits; this could limit future expansion of the system. Based on current and projected future requirements, however, the system has adequate capacity and flexibility to provide the base with sufficient quantities of reliable electric power.

5.2.3 Off-Installation Utility Capabilities

Although the electrical system at Randolph AFB has excess capacity, this utility is only an on-Base distribution system and therefore cannot serve as a source of supply or distribution for off-Base utilities. Similarly, electrical power suppliers have adequate capacity to continue supplying Randolph AFB, but they cannot provide an alternative distribution system for the Base.

5.3 Operational Impact Analysis Summary

As discussed in Section 3.0, the ORM workshop results indicate that, with control measures, all risks associated with privatization of the Randolph AFB utilities would be ranked as "medium" or "low" and within the Air Force tolerance for privatization risk.

Slower response time to power outages in mission-critical areas, and a potential decrease in the quality and reliability of the power in critical areas, were identified as the highest risks associated specifically with privatization of the electrical utility. Without any control measures in place, risk resulting from a slower response time to power outages at the airfield and during emergency/readiness situations was categorized as "high." Backup systems are in place but are not designed to handle extended outages. The workshop participants suggested that, by requiring stringent response times and possibly adding electrical backup facilities, this risk could be reduced to an overall risk classification of "medium."

5.4 Regulatory Review

The following are findings based on information presented in Section 4.0:

- The Randolph AFB electrical system is open to competitive bidding.
- Randolph AFB is included within an electric CCN held by CPS (PUCT Docket No. 59, issued in 1977). A buyer other than CPS could apply to the PUCT for dual certification. If CPS consented, the application could be handled administratively. However, since most of the area within Randolph AFB is subject to exclusive federal jurisdiction, a buyer could petition the PUCT to amend CPS's CCN to delete the Base from the service area. The amendment petition would be based on federal exclusive jurisdiction; prior state action to include the Base within CPS's CCN was without effect since PUCT never had jurisdiction to issue the CCN. In addition, since an alternative buyer would own the existing distribution system, CPS would be unable to serve the Base.
- Because Randolph AFB is not within the municipal limits, the PUCT would have
 original rate and quality of service jurisdiction over the concurrent and proprietary areas
 if a buyer other than CPS obtained the bid. The exclusive federal enclave areas of the
 Base would not be subject to original rate or quality of service jurisdiction of either the
 City of San Antonio or the PUCT. However, as a purchaser of wholesale electricity, a
 buyer other than CPS would have to apply to the PUCT to establish status as a
 wholesale customer.

5.5 Market Analysis Summary

Section 2.0 presents the overall market analysis for Randolph AFB. The conclusions of this analysis that pertain specifically to the electrical distribution system are as follows:

- Five companies—one public utility (CPS, the current service provider) and four privately owned utility companies—expressed interest in purchasing the electrical distribution system at Randolph AFB. Considerable competition for the system is therefore likely.
- Four companies, including CPS, demonstrated interest in bundling the Randolph electrical system with all available utilities at the seven bases addressed by the TRDP. The other company (TNMP) would like to acquire only the electrical utilities at the various bases. None of the companies expressed interest solely in Randolph AFB.

- The existing service provider (CPS) and the other companies propose developing a custom rate for on-base electrical service.
- Four of the five companies interested in the Randolph AFB electrical utility address conjunctive metering or billing in their responses; CPS does not. The responses generally indicate that metering and billing should be examined on a case-by-case basis. One company (U.S Filter-MK) proposes increasing electric, natural gas, and water metering to quantify utility usage separately at various Base facilities, and to focus on high-use facilities to facilitate energy and water conservation.
- The five interested companies provide some discussion of purchase price options. Some companies propose more than one option, and most of the companies' responses indicate flexibility in how a purchase price should be determined.

5.6 Preliminary Economic Analysis

This section presents the results of the economic analysis of privatizing the electric distribution system at Randolph AFB. The analysis includes the following elements:

- Status Quo Costs. These are the estimated operating and capital costs incurred today by the Air Force to operate the system. Estimates are also provided for the cost to remedy current deficiencies, the cost of renewals and replacements, and adjustments to current costs to properly sustain the system over the long term.
- Privatized Costs. This section estimates operating and capital costs likely to be incurred
 by a private operator of the system. It was assumed that the private utility provider
 would pass these costs on to the Air Force in rate charges. In addition to these rate
 charges, Air Force costs were included for transition to private ownership and for Air
 Force management of the utility service provider after the ownership transition is
 complete.
- Life Cycle Cost Comparison. Estimated 25-year cash flows are shown for status quo costs and privatized costs. The cash flows are discounted and the present value of the costs compared. This comparison shows estimated savings or added costs that are projected to result from privatization.

5.6.1 Status Quo Costs

Status Quo Operating Cost

The electric distribution utility operating cost for the status quo at Randolph AFB was estimated as shown in Table 5.6.1-1. These costs were developed using the general approach described in Section 1.3.

The status quo cost of operating and maintaining the electrical distribution system at Randolph AFB is \$389,655; general and administrative costs are estimated to be \$58,448, bringing the total operating cost to \$448,104.

TABLE 5.6.1-1Estimated Electric Utility Operating Costs for Status Quo Alternative Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

	Status	S Quo
	Hourly	Annual
Cost Component	Data	Cost
Operation and Maintenance Cost (\$)		
Costs Available on Cost-per-Hour Basis		
Adjusted Shop Rate (Hourly Rate)		
LaborMilitary	\$10.53	
LaborCivilian	9.81	
Civilian Benefits	3.87	
Incremental Direct Costs	3.54	
Indirect Materials	2.23	
Vehicles	2.32	
Facilities	1.23	
Total Hourly Rate	\$33.53	
Annual Labor Requirements (hours)		
Full Time		
Military		
Positions	2	
Utilization	100%	
Hours	4,160	
Civilian	_	
Positions	2	
Utilization	100%	
Hours	4,160	
Part Time		
Military		
Positions	-	
Utilization	-	
Hours	-	
Civilian	0	
Positions	2	
Utilization Hours	65% 2,704	
Total Annual Labor Requirements	11,024	# 260 620
Total Costs (hourly rate times annual labor rqmt)		\$369,630
Costs Available on Annual Cost Basis		
Direct Materials		17,025
Project Contracts		17,023
Service Contracts		3,000
Environmental Compliance		-
Supporting Utilities		-
Total Costs		\$20,025
Total Operation and Maintenance Cost		\$389,655
·		
General and Administrative Cost (15%)		<u>58,448</u>
Total Operating Cost		\$448,104

Status Quo Capital Cost

Costs to Remedy Current Deficiencies

As noted in Section 5.2.2, the Randolph AFB electrical system is in good condition and is able to adequately meet current and projected future requirements. The system currently has no observed deficiencies that would violate governing codes for operation, maintenance, or safety. The Base is currently replacing all of the system's lead-insulated cable; most of it has already been replaced. Therefore, no construction projects are required.

Renewal and Replacement Costs

The Randolph AFB electrical system will require ongoing renewals and replacements as the system depreciates with time. Over the long term, the average renewal and replacement rate for the overall system is likely to be about the same as the system's average depreciation rate. As shown in Table 5.1.2-1, the average depreciation rate for the electrical system is approximately 2.4509 percent. Renewals and replacements on the system at this rate would have an annual cost of about \$531,690 (2.4509 percent times the system RCN of \$21,693,749). This equals approximately \$552,686 in year 2001 dollars.

Adjustments to Status Quo Costs

As discussed in Section 5.1.1, the electric distribution system at Randolph AFB is in good condition. The programmed construction projects will improve and upgrade the system. These upgrades will have minimal impact on required operations, and the present staff assigned to the electric utility system are sufficient to cover system operation and maintenance. Therefore, no adjustments to the status quo costs are required.

5.6.2 Privatization Costs

Utility Operating Cost

Electric utility service providers, either local or from outside the immediate area, would find it necessary to place personnel on the Base in full-time capacity to monitor and act as a service coordinator in the event of a service interruption. Repair work would be done either through the corporation's own forces or through maintenance and service contracts with local providers. The vehicle through which repair work would be done would depend on the location of the utility provider. In a case where the utility provider has other existing service areas nearby, it is likely that the provider would supplement its staff on Base with its own repair crews. In a case where the utility provider does not have other service areas nearby, it is reasonable to assume that the corporation would rely on service contracts to supplement its staff on Base. The corporation with no other local service areas might find it necessary to have more full-time positions.

A comparison between the two types of service providers indicates that local and remotely located corporations would provide similar service cost scenarios for the electric distribution system at Randolph AFB. The estimated privatized annual operating cost of the Base electric system would be about \$336,830 per year, as shown in Table 5.6.2-1.

The cost estimate for a privatized operation is based on a staff of 4 FTE for operation and maintenance (O&M) of the distribution system. The general and administrative (G&A) costs were estimated at 15 percent of the total costs. An allowance of \$20,000 was included for

TABLE 5.6.2-1Estimated Electric Utility Services Costs for the Private Operator Randolph AFB USAF Utilities Privatization, Feasibility Analysis Report

Operation and Maintenance Cost				
Operation and Maintenance Cost Costs Available on Cost-per-Hour Basis	Position 1	Position 2	Position 3	Position 4
Labor, Including Benefits at 15%	\$28.00	\$26.00	\$21.00	\$15.00
Incremental Direct Costs	φ26.00 3.54	3.54	3.54	3.54
Indirect Materials	2.23	2.23	2.23	2.23
aoua.o				
Vehicles	1.00	4.00	1.00	6.00
Facilities	1.53	1.53	1.53	1.53
Subtotal	\$36.30	\$37.30	\$29.30	\$28.30
Annual Labor Costs (hourly rate times ho	urs)			
Full Time (2080 hours)				
Position 1	\$75,504			
Position 2	\$77,584			
Position 3	\$60,944			
Position 4	\$58,864			
Total	\$272,896			
Costs Available on Annual Cost Basis				
Direct Materials	\$17,000			
Service Contracts	\$3,000			
Total	\$20,000			
Total Operation and Maintenance Cost	\$292,896			
General and Administrative Costs (15%)	\$43,934			
Total Operating Cost	\$336,830			

direct material costs and service contracts. The hourly labor rate was adjusted to include benefits, indirect material costs, vehicle costs, and facility costs.

As noted in Section 3.2, the Air Force has specified use of the Maxwell AFB required response times for utility service interruptions and repairs as guidelines for this Feasibility Analysis (see Volume II, Section 3.0). These requirements are comparable to those for a typical utility system; therefore, no additional costs associated with operational risk mitigation have been included in the privatized utility operating cost.

Benchmarks from data published by the American Public Power Association (APPA) were used to evaluate this estimate for reasonableness. The following benchmarks were used to calculate annual operating costs for a typical electric utility with the general characteristics of the Base electric system:

- Transmission and distribution expenses per customer
- Customer accounts expense per customer
- G&A expense per customer

Using these benchmarks produced annual operating costs of \$582,000. The annual operating costs decreased to \$289,000 per year after adjustments were made to reflect specific situations of the Base electric system. These adjustments include:

- Reducing the cost of customer service and G&A expenses by 80 percent. Activities for
 this account consist of tasks such as meter reading and accounting. It is assumed that the
 utility would not read meters at every service, but would check the larger services on a
 periodic basis (e.g., monthly) and check the smaller services on a less frequent basis (e.g.,
 quarterly).
- Adjustment to distribution system O&M based on system age or other system condition factors. In this case, the Base electric system has an average age of 17 years. Therefore, no adjustment was made to O&M costs.

This benchmark comparison shows the projected privatized operating costs to be reasonable. The total benchmark cost is within 15 percent of the projected costs for operation of the Randolph AFB electric system.

Utility Capital Cost

As noted above, the capital cost estimates for the status quo were projected on the basis of investments needed to put the utility system in good condition and maintain that condition for the long term. For the purposes of this preliminary economic analysis, it was assumed that these investments would be the same as those that would likely be made by a private utility provider.

Air Force Transition and Post-Award Administrative Costs

The Air Force will incur a number of costs in the process of privatizing its utility systems. Transition costs will include employee costs, such as severance costs and relocation costs, and activities needed to transfer functions to the new owner.

The Air Force has determined that employee transition and system transfer costs cannot be quantified with any certainty. As a result, the IPT concluded that these costs should not be included in the feasibility analysis. These costs will be become clearer as part of Phase III and will be included in the Certified Economic Analysis conducted in that phase of the privatization process.

Under private operation of the utility system, the Air Force would also incur costs to oversee the program. Activities associated with the oversight function would include meter reading, quality assurance, and contract compliance review. For the purpose of this analysis, it is assumed that this function will require 0.25 FTE or \$12,500 annually.

Costs to Meter On-Base Facilities Not Currently Metered

Regardless of whether or not it privatizes the electrical system, the Air Force may decide to meter all on-base electrical system end users. Randolph AFB currently has 691 buildings and 149 electric meters, and would therefore require an additional 542 meters (assuming one meter per building; Volume II, Section 5.0 presents a table showing the breakdown of meters and costs for each TRDP base). These meters would likely be single-phase for housing units and three-phase for other buildings. The estimated installed costs per meter are \$1,200 for single-phase and \$2,700 for three-phase (these costs assume digital meters, GE Model 9S). Assuming that 393 housing buildings and 149 non-housing buildings require meters, the estimated total cost for all additional meters is approximately \$874,000.

Because utility regulators and most parties interested in acquiring the system are open to conjunctively metered service, installation of meters at end uses, although beneficial, is probably not necessary. If the Air Force decides that meters should be installed, it is assumed that they would be installed under both the status quo and privatization alternatives. Because the costs would therefore be the same for both alternatives, they were excluded from the life-cycle cost analysis.

5.6.3 Life-Cycle Cost Comparison

A life-cycle cost comparison of the status quo and the privatization alternative is shown in Table 5.6.3-1 and is summarized as follows:

	Present Value (\$)	Savings (\$)	Savings (%)
Air Force Adjusted Status Quo	18,454,379		
Privatized Utility Public Owner	16,593,987	1,860,392	10.0
Private Owner	19,514,949	(1,060,570)	-5.7

TABLE 5.6.3-1

Electric Utility

Life Cvcle Cost Comparison of Status Quo vs. Privatization Alternatives

Randolph AFB

USAF Utilities Privatization Feasibility Analysis Report

	Present	Value	Estimated Ac	ctual (\$)					Forec	ast (\$)				
	(2001 do	llars)	1998	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Air Force Status Quo Costs Operating Capital Remedies for Current Deficiencies Routine Renewals and Replacements	8,440, 0 10,014		448,104 - 531,690		465,799 - 552,686	465,799 552,686								
Total Air Force Costs	18,454	,			1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486
Debation 4 Courts	Own													
Privatized Costs	Public	Private												
Net Utility Provider Costs to be Recovered in Rate Operating Capital	6,344,188	6,344,188	336,830		350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132
Remedies for Current Deficiencies Routine Renewals and Replacements	- 10,014,361	- 12,935,324	-		- 552,686	- 552,686	- 552,686	- 552,686	- 552,686	- 552,686	- 552,686	- 552,686	- 552,686	- 552,686
Air Force Management Air Force Program Oversight Transition Costs	235,437 -	235,437 -	12,500		12,994 -	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994
Total Privatized Cost	16,593,987	19,514,949			915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812
Savings (\$) Savings (%)	1,860,392 10.1%	(1,060,570) -5.7%			102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674

Notes:

1. Estimated actual costs in 1998 dollars; all other costs in 2001 dollars.

2. All costs after both corporate and individual Federal income tax.

FTE= Full Time Equivalent

Assumptions:

From Mid-year 1998 to Mid-year 1999 0.80% From Mid-year 1999 to Mid-year 2000 1.50% From Mid-year 2000 to Mid-year 2001 1.60% Private Cost of Capital (real, after tax) 5.00% Federal/Public Cost of Capital (real) 2.90% Implicit Financing Period (Years) 30 FTE for Privatization Oversight 0.25 \$ 50,000 Annual Cost per FTE

TABLE 5.6.3-1
Electric Utility
Life Cycle Cost Comparison of Status Quo vs. Privatization Alternatives
Randolph AFB
USAF Utilities Privatization Feasibility Analysis Report

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Air Force Status Quo Costs															
Operating	465,799	465,799	465,799	465,799	465,799	465,799	465,799	465,799	465,799	465,799	465,799	465,799	465,799	465,799	465,799
Capital Remedies for Current Deficiencies															
Routine Renewals and Replacements	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686
Total Air Force Costs	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486	1,018,486
Privatized Costs															
Net Utility Provider Costs to be Recovered in R	ate														
Operating	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132	350,132
Capital Remedies for Current Deficiencies															
Remedies for Current Deliciencies Routine Renewals and Replacements	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686	552,686
Air Force Management															
Air Force Program Oversight (FAS) Transition Costs	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994
Total Privatized Cost	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812	915,812
Savings (\$) Savings (%)	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674	102,674

As shown, the results of the preliminary economic analysis are that privatization of the Randolph AFB electric system would be economic for the Air Force. Privatization potentially represents savings of as much as \$1,860,392, or 10.1 percent. This assumes that a publicly owned utility will make a competitive bid for the system. Alternatively, it assumes that a privately owned entity will overcome its cost of capital disadvantage to make a bid that is comparable to the cost projection for a publicly owned utility provider.

These results are based on the present value of the status quo and privatized costs over a 25-year period. Cash flows for both the adjusted status quo and privatized cases were forecast based on cost analyses described above. The present value of costs is calculated by discounting the stream of annual costs at a 2.9 percent real discount rate. This is the 30-year real interest rate on treasury notes and bonds as specified in OMB Circular No. A-94 (February 1999).

The present value of privatized costs differs depending on whether the owner is a public or a private utility. This results from the different cost of capital associated with financing routine renewals and replacements. The basis for including these differences in the present value calculations is discussed in Section 1.3.

5.7 Electrical System Conclusions

Privatization of the electric utility system at Randolph AFB is feasible, based on the findings of this report in the areas of market interest, operational impacts, the Texas regulatory environment, system conditions, and preliminary economics. The final feasibility of privatizing this system will not be known with certainty until the end of Phase III. At that time the actual bids from prospective system purchasers will be evaluated as part of the Air Force source selection process, and the final economic analysis will be certified. However, there is enough promise shown in the findings of this preliminary analysis to justify proceeding to Phase II of the Air Force privatization process.

6.0 Natural Gas Distribution System Analysis

6.1 System Overview

6.1.1 Description

Natural gas is supplied to Randolph AFB by PG&E-Reata. This fuel supply is used to meet space and water heating requirements on Base, primarily in buildings. There are no natural gas-fired air conditioners or compressed natural gas (CNG) fueling stations on Base.

The natural gas utility at Randolph AFB is nearly state of the art. Operator interviews, visual inspections, and review of the system drawings indicate that nearly all of the natural gas system components on the Base were replaced in the early to mid-1990s. The piping material is polyethylene (PE). Only a small section of carbon steel piping remains, and this section is programmed for replacement. No code violations were observed during the site visit. The distribution system is looped so that, in nearly all locations, buildings can be fed from at least two different paths.

The distribution system includes 176,960 linear feet (lf) of piping. The system operates at one pressure Basewide (25 pounds per square inch gauge—psig). Mains range from 3 to 12 inches in diameter, and service lines range from ¾ to 1 inch. Other facilities include one gate-pressure-reducing (i.e., regulator) station, owned and operated by PG&E-Valero; 258 PE ball valves; and 67 lubricated steel plug valves. The service risers are anodeless, according to Base operations personnel. Each building has at least one regulator to lower the gas pressure for equipment and appliance use (i.e., 7 inches of water to 1 psig). Some buildings have gas meters, which were installed for energy management purposes or for measuring natural gas use as a basis for charging for service to non-Air Force tenants on Base.

The Base operations group, located in Building 1047 near the flight line, consists of six operators (three military and three civilian) who service the gas, water, and sewer utilities. These operators conduct meter reading, recurring maintenance, and line locating. The natural gas operation has two electro-fusion machines, but trenching equipment such as backhoes comes from the Pavements and Equipment Shop. Several trailers near Building 1047 hold fittings and tools, and spare pipe is located outside.

A yearly leakage survey is completed by an outside contractor though Base Civil Engineering. There are very few leaks in the majority of the PE system, and most leak repair work is due to contractor dig-ins. However, a short section of 12-inch and 10-inch PE pipe that comes from the PG&E regulator station was not fused correctly when installed in the early 1990s. This section has had several leaks at butt-fused joints. There have been 25 documented repairs on this segment in the last 5 years. The severity and frequency of these leaks on the 10-inch-diameter PE prompted the Base to install a 3-inch bypass of this section to feed the Base when repairs are needed.

Only minimal system deficiencies were observed. These are described in Section 6.6.1. Overall, the system appears to be simple and in excellent condition.

6.1.2 Inventory and System Value

Table 6.1.2-1 presents an inventory of the natural gas utility system, together with estimated system value in terms of replacement costs and depreciation rates. The estimating process was based on "take-off" calculations augmented by real property records, as described in Section 1.3. Unit costs for each line item were then estimated based on a combination of the sources listed in Section 1.3.6.

This inventory of facilities yields an overall RCN value of approximately \$4,737,265 (see Table 6.1.2-1). Based on an estimate of installation dates and useful life for this type of equipment, the RCNLD is approximately \$3,101,197.

6.2 Utility Requirements Assessment

6.2.1 Current and Future Natural Gas Demand

Randolph AFB currently has a peak gas demand of nearly 35,400 thousand cubic feet (MCF) per month. As noted in Section 1.2, key projects planned for Randolph will increase the total square footage of buildings on Base by less than 1 percent. Based on these plans, and given the ongoing energy conservation program at the Base, future peak requirements will likely remain at about this level. Therefore, system capacity was evaluated against requirements sustained at their existing level.

6.2.2 System Capacity

It was concluded that the Randolph AFB natural gas system is conservatively sized and has excess capacity. This conclusion is based on the following factors:

- Little pressure reduction is recorded throughout the Base during peak loads.
- The Base as currently configured has no buildings with gas pressure concerns during peak loading times.
- The mains are all looped (i.e., provide two directions for flow).
- The mains are 4- and 6-inch-diameter pipe, which is large for a system of this size and is consistent with the type of pressure drops the operators have observed
- The system is operated at 25 psig but could be operated at much higher pressure (up to 60 psig) if the maximum allowable operating pressure (MAOP) were uprated. This ability to uprate in the future represents additional load capacity for the Base.
- The Base has MILCON projects for the next 5 years that will increase the Base building square footage by less than 1 percent. The estimated increase in natural gas use is also less than 1 percent. The Base natural gas utility as currently configured is more than capable of handling this small increase in projected peak load requirements.

TABLE 6.1.2-1 Natural Gas Utility Inventory Randolph AFB

USAF Utilities Privatization, Feasibility Analysis Report

		,,							Cost to Remedy		Weighted
				Approximate		Estimated			Current	Depreciation	Depreciation
	Size			Year of	Life	Unit Cost	RCN	RCNLD	Deficiencies	Rate	Rate
Item	(in.)	Quantity	Unit	Construction	(Years)	(\$)	(\$)	(\$)	(\$)	(%)	(\$)
PE Gas Pipe ^a			_								
	12	200	f	1993	75	40.00	8,000	7,360	5,500	1.3%	0.0032%
	10 6	1,000 35,000	f f	1993 1990	75 75	34.00 18.50	34,000 647,500	31,280 569,800	22,000	1.3% 1.3%	0.0134% 0.2553%
	4	40,000	ř	1990	75 75	13.00	520,000	457,600	-	1.3%	0.2050%
	3	40,000	ř	1990	75 75	12.00	480,000	422,400	-	1.3%	0.1892%
	2	12,000	ř	1990	75 75	11.00	132,000	116,160		1.3%	0.1692%
	1	30,000	ř	1990	75	10.00	300,000	264,000	_	1.3%	0.1183%
	3/4	20,000	ř	1990	75	10.00	200,000	176,000	_	1.3%	0.0788%
Steel Gas Pipe ^{a,b}	٥, .	20,000	•	1000		10.00	200,000	110,000		1.070	0.010070
	3	500	f	1968	40	12.00	6,000	1,350	6,000	2.5%	0.0044%
	1	200	ř	1968	40	10.00	2,000	450	2,000	2.5%	0.0015%
Steel Plug Valves ^c											
	6	15	ea	1968	25	1,850	27,753	-	-	4.0%	0.0328%
	4	25	ea	1968	25	1,212	30,309	-	-	4.0%	0.0358%
	3	10	ea	1968	25	985	9,846	-	-	4.0%	0.0116%
	2	10	ea	1968	25	573	5,727	-	-	4.0%	0.0068%
	1	7	ea	1968	25	377	2,637	-	-	4.0%	0.0031%
PE Ball Valves ^c											
	6	20	ea	1990	30	2,084	41,689	29,182	-	3.3%	0.0411%
	4	50	ea	1990	30	934	46,723	32,706	-	3.3%	0.0460%
	3	100	ea	1990	30	634	63,445	44,412	-	3.3%	0.0625%
	2	50	ea	1990	30	454	22,723	15,906	-	3.3%	0.0224%
	1	38	ea	1990	30	216	8,219	5,754	-	3.3%	0.0081%
Small Regulators		712	ea	1980	20	1,000	712,000	35,600	-	5.0%	1.0526%
Large Meters ^e	1 psi	30	ea	1980	20	1,700	51,000	2,550	-	5.0%	0.0754%
Small Meters ^e	7 in. H2O		ea	1980	20	250	30,500	1,525	-	5.0%	0.0451%
TOTAL							3,382,070	2,214,034	35,500		2.36%
General Requirements		15	%				507,310	332,105	5,325		
SUBTOTAL		ID	70				3,889,380	2,546,139	40,825		
Contingency		5	%				194,469	127,307	4,083		
CONSTRUCTION TOTAL							4,083,849	2,673,446	44,908		
Engineering Services During Construction		10 6	%				408,385 245,031	267,345	4,491 2,694		
TOTAL		ь	%				4,737,265	160,407 3,101,197	2,694 52,093		

TOTAL

a Quantity estimate based on take-offs from Base drawings as modified by Base personnel.

Notes:

Notes:

All costs are in February 1999 dollars. Costs estimated at order of magnitude level.

RCN = replacement cost new PE = polyethylene

RCNLD = replacement cost new less depreciation in. = inches

If = linear feet ea = each

psi = pounds per square inch

b Unit cost estimate based on PE installation cost because PE would be installed today.

^c Valve total number provided by Randolph AFB personnel.

^d Quantity estimate based on one regulator per occupied facility. Regulator size based on facility size and use.

^e Quantity estimate based on Base meter lists. Meter size estimate based on facility size and use.

¹ 10 percent contingency used to remedy any current deficiencies.

6.2.3 Off-Installation Utility Capabilities

Although the natural gas utility system at Randolph AFB has excess capacity, this utility is only an on-Base distribution system and therefore cannot serve as a source of supply or distribution for off-Base utilities. Similarly, local natural gas suppliers have adequate capacity to continue bulk supply to Randolph AFB, but they cannot provide an alternative distribution system for the Base.

6.3 Operational Impact Analysis Summary

As discussed in Section 3.0, the ORM workshop results indicate that, with control measures, all risks associated with privatization of the Randolph AFB utilities would be ranked as "medium" or "low" and within the Air Force tolerance for privatization risk.

Slower response time to critical system problems such as gas leaks was identified as the highest risk associated specifically with gas system privatization. Without any control measures in place, this risk was categorized as "high." The workshop participants suggested that by requiring control measures such as stringent response times, this risk could be reduced to "medium." Other potential risks associated with privatizing the Base utilities in general (e.g., mission degradation due to decreased reliability) are also assumed to apply to the natural gas system. These risks were ranked as "medium" or "low" without control measures and would likely be further reduced with control measures.

6.4 Regulatory Review

Based on the findings of the regulatory analysis summarized in Section 4.0, the Randolph AFB natural gas system is open to competitive bidding.

The state does not issue CCNs for natural gas service. RRC reports that CPS, the city-owned gas utility, serves the San Antonio area. Because Randolph AFB is not located within the City's corporate limits, the city would not regulate the manner in which a buyer could use city streets if such use were necessary for the gas distribution system.

6.5 Market Analysis Summary

Section 2.0 presents the overall market analysis for Randolph AFB. The conclusions of this analysis that pertain specifically to the natural gas distribution system are as follows:

- Six companies—one public utility (CPS, the current service provider) and five privately owned utility companies—expressed interest in purchasing the natural gas system at Randolph AFB. Considerable competition for the system is therefore likely.
- Four companies, including CPS, demonstrated interest in bundling the Randolph natural gas system with all available utilities at the seven bases addressed by the TRDP. The other companies express interest in acquiring the Randolph natural gas system in addition to the gas systems at other bases.

- The existing service provider (CPS) and the other companies propose developing a custom rate for on-base natural gas service.
- Five of the six companies interested in the Randolph AFB natural gas system address
 conjunctive metering or billing in their responses; CPS does not. The responses generally
 indicate that metering and billing should be examined on a case-by-case basis. One
 company (U.S Filter-MK) proposes increasing electric, natural gas, and water metering
 to quantify utility usage separately at various Base facilities, and to focus on high-use
 facilities to facilitate energy and water conservation.
- The six interested companies provide some discussion of purchase price options. Some companies propose more than one option, and most of the companies' responses indicate flexibility in how a purchase price should be determined.

6.6 Preliminary Economic Analysis

This section presents the results of the economic analysis of privatizing the natural gas distribution system at Randolph AFB. The analysis includes the following elements:

- Status Quo Costs. These are the estimated operating and capital costs incurred today by the Air Force to operate the system. Estimates are also provided for the cost to remedy current deficiencies, the cost of renewals and replacements, and adjustments to current costs to properly sustain the system over the long term.
- Privatized Costs. This section estimates operating and capital costs likely to be incurred
 by a private operator of the system. It was assumed that the private utility provider
 would pass these costs on to the Air Force in rate charges. In addition to these rate
 charges, Air Force costs were included for transition to private ownership and for Air
 Force management of the utility service provider after the ownership transition is
 complete.
- Life Cycle Cost Comparison. Estimated 25-year cash flows are shown for status quo costs and privatized costs. The cash flows are discounted and the present value of the costs compared. This comparison shows estimated savings or added costs that are projected to result from privatization.

6.6.1 Status Quo Costs

Status Quo Operating Cost

The natural gas distribution utility operating cost for the status quo at Randolph AFB was estimated as shown in Table 6.6.1-1. These costs were developed using the general approach described in Section 1.3.

The status quo cost of operating and maintaining the natural gas distribution system at Randolph AFB is \$121,069; general and administrative costs are estimated to be \$27,846, bringing the total operating cost to \$148,915.

TABLE 6.6.1-1 Estimated Natural Gas Utility Operating Costs for Status Quo Alternative *Randolph AFB*

USAF Utilities Privatization, Feasibility Analysis Report

_	Status	Quo
	Hourly	Annual
Cost Component	Data	Cost
Operation and Maintenance Cost (\$)		
Costs Available on a Cost-per-Hour Basis		
Adjusted Shop Rate (Hourly Rate)		
LaborMilitary	\$1.62	
LaborCivilian	17.70	
Civilian Benefits	6.99	
Incremental Direct Costs	3.08	
Indirect Materials	0.42	
Vehicles	\$0.28	
Facilities	0.05	
Total Hourly Rate	\$30.15	
Annual Labor Requirements (hours)		
Full Time		
Military		
Positions	-	
Utilization	-	
Total Hours	-	
Civilian		
Positions	-	
Utilization	-	
Total Hours	-	
Part Time		
Military		
Positions	2.5	
Utilization	33%	
Total Hours	1,716	
Civilian		
Positions	3	
Utilization	33%	
Total Hours	2,059	
Total Annual Labor Requirements	3,775	
Total Costs (hourly rate times annual labor rqmt)		\$113,820
Costs Available on an Annual Cost Basis		
Direct Materials		3,749
Project Contracts		-
Service Contracts		3,500
Environmental Compliance		-
Supporting Utilities	-	-
Total Costs		\$7,249
Total Operation and Maintenance Cost		\$121,069
General and Administrative Cost (23%)	-	27,846
Total Operating Cost		\$148,915

Status Quo Capital Cost

Cost to Remedy Current Deficiencies

As noted in Section 6.2.2, the Randolph AFB natural gas system is in good condition and is able to adequately meet existing and projected requirements. The system is conservatively sized with excess capacity and provides natural gas at little pressure drop, even during peak operation. Once the 10- and 12-inch-diameter PE joint leaks and carbon steel piping are repaired or replaced, the system will be state of the art.

The system currently has no observed deficiency that would violate governing codes for operation, maintenance, or safety. However, there are two system deficiencies that should be remedied:

- 1. The system has a history of serious leaks in the 10- and 12-inch PE piping at the system entrance. The Base operators did not know if all the joints have been repaired (i.e., only leaking joints were repaired). Because these joints are known to be defective and 25 have leaked periodically over the last 5 years, it is prudent for the Base to determine the number of joints not repaired and repair them in a proactive manner. This action would avoid future gas system shutdowns due to another failure of these joints. Over the pipeline length of 1,000 linear feet (lf), it is estimated that there are 50 joints (20-foot pipe lengths). Because 25 have already been repaired, approximately 25 more joints need to be inspected and repaired. This repair work is estimated to cost approximately \$40,000, or \$1,600 per joint repair (including allowances for general requirements, contingencies, engineering, and services during construction).
- 2. The system has a small amount of steel pipe that has been programmed for replacement with PE. The estimated length of steel pipe to be replaced is 700 lf. Replacing 700 lf of steel pipe with PE is estimated to cost approximately \$12,000.

These cost estimates are included in Table 6.1.2-1 under Cost to Remedy Current Deficiencies. It is forecast that these remedies to system deficiencies can be accomplished in the first year of the forecast period.

Renewal and Replacement Costs

As shown in Table 6.1.2-1, the annual depreciation rate for the natural gas system at Randolph AFB is 2.36 percent. However, assuming that the required construction projects described above are completed, the only system renewals and replacements for the next 10 years will be for meters and regulators. It is forecast that renewals and replacements of meters and regulators will be made at an average rate equal to the depreciation rate for this equipment. These pieces of the total system have an RCN value of about \$1,111,500 and an annual depreciation rate of 5.0 percent or approximately \$55,600 (including allowances for general requirements, contingency, engineering, and services during construction). In 2001 dollars, this equates to \$57,796.

After 10 years, some valves are expected to start requiring repair or replacement. It is forecast that these will need to be replaced at a rate equal to the depreciation rate for this equipment. This would add approximately \$14,400 per year (RCN of \$435,300, annual capital renewal percentage of 3.3 percent). Therefore, between years 11 and 25, the annual cost for renewals and replacements is forecast to be approximately \$70,000. In 2001 dollars, this equates to \$72,764.

PE pipe is not expected to require renewal and replacement until after 25 years. Costs to repair PE pipe broken by contractors are not included in these estimates.

Adjustments to Status Quo Costs

As described in Section 6.1.1, the gas distribution system at Randolph AFB is in good condition. If the programmed construction projects are completed, there will be minimal impact on required operations. The present staff assigned to the natural gas utility system are sufficient to cover operation and maintenance. Therefore, no adjustments to the status quo costs are required.

6.6.2 Privatization Costs

Utility Operating Cost

Natural gas utility service providers, either local or from outside the immediate area, would find it necessary to place personnel on the Base in either a full-time or part-time capacity to monitor and act as a service coordinator in the event of a service interruption. Repair work would be done either through the corporation's own forces or through maintenance and service contracts with local providers. The vehicle through which repair work would be done would depend on the location of the utility provider. In a case where the utility provider has other existing service areas nearby, it is likely that the provider would supplement its staff on Base with its own repair crews. In a case where the utility provider does not have other service areas nearby, it is reasonable to assume that the corporation would rely on service contracts to supplement its staff on Base. The corporation with no other local service areas might find it necessary to have more full-time positions.

A comparison between the two types of service providers indicates that a local corporation would provide the least costly service scenarios for the gas distribution system at Randolph AFB. The estimated privatized annual operating costs of the gas system would be about \$111,964 per year, as shown in Table 6.6.2-1.

The cost estimate for a privatized operation is based on a staff of 1.2 FTE for operation and maintenance (O&M) of the distribution system. This assumes one person full-time and an average of two additional people one day per week. The general and administrative (G&A) costs were estimated at 23 percent of the total costs. An allowance of \$7,000 was included for direct material costs and service contracts. The hourly labor rate was adjusted to include benefits, indirect material costs, vehicle costs, and facility costs.

The proposed staff level assumes that the gas utility will be worked in conjunction with other local utility service. For a stand-alone operation, an operating crew of 3 people would be considered a minimum staff level. However, this staff level would increase the annual operating costs to \$200,000.

• As noted in Section 3.2, the Air Force has specified use of the Maxwell AFB required response times for utility service interruptions and repairs as guidelines for this

TABLE 6.6.2-1Estimated Natural Gas Utility Service Costs for the Private Operator Randolph AFB USAF Utilities Privatization, Feasibility Analysis Report

Operation and	Mainteneance Cost
Coeranon and	Mainteneance Cost

Costs Available on Cost-per-Hour Basis	Position 1	Position 2	Position 3
Labor, Including Benefits at 15%	\$26.00	\$25.00	\$15.00
Incremental Direct Costs	3.08	3.08	3.08
Indirect Materials	0.42	0.42	0.42
Vehicles	1.00	1.00	1.00
Facilities	0.07	0.07	0.07
Subtotal	\$30.57	\$29.57	\$19.57

Annual Labor Costs (hourly rate times hours) Full Time (2080 hours) Position 1 \$63,586 Part Time (416 hours) Position 2 \$12,301 Position 3 \$8,141 Total \$84,028 Costs Available on Annual Cost Basis **Direct Materials** \$3,500 Service Contracts \$3,500 Total \$7,000 **Total Operation and Maintenance Cost** \$91,028 General and Administrative Costs (23%) \$20,936 **Total Operating Cost** \$111,964

Feasibility Analysis (see Volume II, Section 3.0). These requirements are comparable to those for a typical utility system; therefore, no additional costs associated with operational risk mitigation have been included in the privatized utility operating cost.

Benchmarks from data published by the American Gas Association (AGA) were used to evaluate this estimate for reasonableness. The following benchmarks were used to calculate the annual operating costs for a typical gas utility with the general characteristics of the Base gas system:

- Total system plant value per employee
- Transmission and distribution expenses per mile of pipe
- Customer accounts expense per customer

The annual operating costs based on the system value benchmark are \$258,000. This factor is influenced by the 14-year average age of the gas system and the lower depreciation rate for PE pipe.

Using the benchmarks for transmission and distribution T&D and for customer service produced annual operating costs of \$224,000. The annual operating costs decreased to \$115,000 per year after adjustments were made to reflect specific situations of the Base gas system. These adjustments include:

- Reducing the cost of customer service expenses by 80 percent. Activities for this account consist of tasks such as meter reading and accounting. It is assumed that the utility would not read meters at every service, but would check the larger services on a periodic basis (e.g., monthly) and check the smaller services on a less frequent basis (e.g., quarterly).
- Reducing O&M costs by 40 percent to reflect the high percentage of PE pipe in the gas system. PE pipe has lower maintenance requirements and longer service life than steel pipe.

This benchmark comparison shows the estimated operating costs to be reasonable. The total benchmark cost is within 3 percent of the projected costs for operation of the Randolph AFB gas system.

Utility Capital Cost

As noted above, the capital cost estimates for the status quo were projected on the basis of investments needed to put the utility system in good condition and maintain that condition for the long term. For the purposes of this preliminary economic analysis, it was assumed that these investments would be the same as those that would likely be made by a private utility provider.

Air Force Transition and Post-Award Administrative Costs

The Air Force will incur a number of costs in the process of privatizing its utility systems. Transition costs will include employee costs, such as severance costs and relocation costs, and activities needed to transfer functions to the new owner.

The Air Force has determined that employee transition and system transfer costs cannot be quantified with any certainty. As a result, the IPT concluded that these costs should not be included in the feasibility analysis. These costs will be become clearer as part of Phase III and will be included in the Certified Economic Analysis conducted in that phase of the privatization process.

Under private operation of the utility system, the Air Force would also incur costs to oversee the program. Activities associated with the oversight function would include meter reading, quality assurance, and contract compliance review. For the purpose of this analysis, it is assumed that this function will require 0.25 FTE or \$12,500 annually.

Costs to Meter On-Base Facilities Not Currently Metered

The Air Force, regardless of whether or not it privatizes the natural gas system, may decide to meter all on-base gas system end users. Randolph AFB currently has 691 buildings and 60 gas meters, and would therefore require an additional 631 meters (assuming one meter per building; Volume II, Section 6.0 presents a table showing the breakdown of meters and costs for each TRDP base). These meters would likely be small for housing units/small buildings and large for other buildings. The estimated installed costs per meter are \$250 for small meters and \$1,700 for large meters. Assuming that 90 percent of the meters are small, the estimated total cost for all additional meters is approximately \$250,000.

Because utility regulators and most parties interested in acquiring the system are open to conjunctively metered service, installation of meters at end uses, although beneficial, is probably not necessary. If the Air Force decides that meters should be installed, it is assumed that they would be installed under both the status quo and privatization alternatives. Because the costs would therefore be the same for both alternatives, they were excluded from the life-cycle cost analysis.

6.6.3 Life-Cycle Cost Comparison

A life-cycle cost comparison of the status quo and the privatization alternative is shown in Table 6.6.3-1 and is summarized as follows:

	Present Value (\$)	Savings (\$)	Savings (%)
Air Force Adjusted Status Quo	4,045,336		
Privatized Utility Public Owner	3,584,815	460,521	11.4
Private Owner	3,946,651	98,685	2.4

As shown, the results of the preliminary economic analysis are that privatization of the Randolph AFB natural gas system would be economic for the Air Force. Privatization potentially represents savings of as much as \$460,521, or 11.4 percent. This assumes that CPS or some other local publicly owned system will make a competitive bid, or that a privately owned entity will overcome its cost of capital disadvantage to make a competitive bid that is comparable to the cost projection for a publicly owned utility provider.

TABLE 6.6.3-1 Natural Gas Utility Life Cycle Cost Comparison of Status Quo vs. Privatization Alternatives I ISΔE Litilities Privatization Feasibility Analysis Report

	Present	Present Value Esti		Actual (\$)					Foreca	ıst (\$)				
	(2001 de	ollars)	1998	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Air Force Status Quo Costs														
Operating Capital	2,804,	801	148,915		154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795
Remedies for Current Deficiencies	54,1	50	52,093		54,150									
Routine Renewals and Replacements	1,186,	386			57,796	57,796	57,796	57,796	57,796	57,796	57,796	57,796	57,796	57,796
Total Air Force Costs	4,045,	336			266,741	212,591	212,591	212,591	212,591	212,591	212,591	212,591	212,591	212,591
	Own	er												
Privatized Costs	Public	Private												
Net Utility Provider Costs to be Recovered in Rate														
Operating	2,108,842	2,108,842	111,964		116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386
Capital														
Remedies for Current Deficiencies	54,150	69,944	52,093		54,150	-	-	-	-	-	-	-	-	-
Routine Renewals and Replacements	1,186,386	1,532,428			57,796	57,796	57,796	57,796	57,796	57,796	57,796	57,796	57,796	57,796
Air Force Management														
Air Force Program Oversight	235,437	235,437	12,500		12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994
Transition Costs	-	-			-									
Total Privatized Cost	3,584,815	3,946,651			241,325	187,175	187,175	187,175	187,175	187,175	187,175	187,175	187,175	187,175
Savings (\$) Savings (%)	460,521 11.4%	98,685 2.4%			25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416

Notes:

1. Estimated actual costs in 1998 dollars; all other costs in 2001 dollars.

2. All costs after both corporate and individual Federal income tax.

FTE= Full Time Equivalent

Assumptions:

From Mid-year 1998 to Mid-year 1999 0.80% From Mid-year 1999 to Mid-year 2000 1.50% From Mid-year 2000 to Mid-year 2001 1.60% Private Cost of Capital (real, after tax) 5.00% Federal/Public Cost of Capital (real) 2.90% Implicit Financing Period (Years) 30 FTE for Privatization Oversight 0.25 Annual Cost per FTE \$50,000

TABLE 6.6.3-1
Natural Gas Utility
Life Cycle Cost Comparison of Status Quo vs. Privatization Alternatives
Randolph AFB
USAF Utilities Privatization Feasibility Analysis Report

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Air Force Status Quo Costs															
Operating Capital Remedies for Current Deficiencies	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795	154,795
Routine Renewals and Replacements	72,764	72,764	72,764	72,764	72,764	72,764	72,764	72,764	72,764	72,764	72,764	72,764	72,764	72,764	72,764
Total Air Force Costs	227,559	227,559	227,559	227,559	227,559	227,559	227,559	227,559	227,559	227,559	227,559	227,559	227,559	227,559	227,559
Privatized Costs															
Net Utility Provider Costs to be Recovered in Rate Operating Capital	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386	116,386
Remedies for Current Deficiencies Routine Renewals and Replacements	- 72,764														
Air Force Management Air Force Program Oversight (FAS) Transition Costs	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994
Total Privatized Cost	202,144	202,144	202,144	202,144	202,144	202,144	202,144	202,144	202,144	202,144	202,144	202,144	202,144	202,144	202,144
Savings (\$) Savings (%)	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416	25,416

These results are based on the present value of the status quo and privatized costs over a 25-year period. Cash flows for both the adjusted status quo and privatized cases were forecast based on cost analyses described above. The present value of costs is calculated by discounting the stream of annual costs at a 2.9 percent real discount rate. This is the 30-year real interest rate on treasury notes and bonds as specified in OMB Circular No. A-94 (February 1999).

The present value of privatized costs differs depending on whether the owner is a public or a private utility. This results from the different cost of capital associated with financing routine renewals and replacements. The basis for including these differences in the present value calculations is discussed in Section 1.3.

6.7 Natural Gas Distribution System Conclusions

Privatization of the natural gas utility system at Randolph AFB is feasible, based on the findings of this report in the areas of market interest, operational impacts, the Texas regulatory environment, system conditions, and preliminary economics. The final feasibility of privatizing this system will not be known with certainty until the end of Phase III. At that time the actual bids from prospective system purchasers will be evaluated as part of the Air Force source selection process, and the final economic analysis will be certified. However, there is enough promise shown in the findings of this preliminary analysis to justify proceeding to Phase II of the Air Force privatization process.

7.0 Water System Analysis

7.1 System Overview

7.1.1 Description

The water distribution system at Randolph AFB consists of five water wells completed into the Edwards Aquifer. The pumps on these wells range in size from 40 to 125 horsepower (hp), and their capacities range from 400 to 1,250 gallons per minute (gpm). Table 7.1.1-1 presents well pump sizes and capacities for all wells at Randolph AFB.

TABLE 7.1.1-1Well Specification Data at Randolph AFB
Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

Well Identification No.	Pump Capacity (gpm)	Pump Horsepower (hp)
1	400	40
2	1,250	125
7	700	100
10	1,250	125
11	1,100	100

Source: Data obtained from Base Civil Engineering.

Three of these wells are currently in service and are connected to two elevated 500,000-gallon storage tanks (Building 100 and Building 864). These tanks establish pressure planes that deliver potable water through an aging distribution system to tenant and Base support facilities. Civil engineering personnel monitor the system through the environmental monitoring control system (EMCS).

Limited treatment in the form of chlorination for disinfection and fluoridation for health enhancement occurs at the well head. Standard chlorination equipment consisting of two 150-pound (lb) cylinders mounted on a scale that has automatic switchover capability is connected to inline educators that control the flow of gaseous chlorine as it is injected into the flow stream. Fluoridation equipment is similar to that used for chlorination.

The distribution system consists primarily of cast iron pipe that dates back to the 1930s. Generally, this pipe is still in good condition. However, the majority of the isolation valves within the system are in poor condition and require maintenance. Some pipe replacement has occurred, but it has been limited to areas within the circle surrounding the Taj Mahal. The replacement pipe is polyvinyl chloride (PVC) C900 pipe.

System performance is marginal. Average water pressures range between 45 and 50 pounds per square inch (psi). Fireflow tests conducted by civil engineering personnel have resulted in residual pressures below the minimum pressure required by state criteria (35 psi). System isolation valves are poorly arranged and often allow two or more fire hydrants to be out of service when closed. Furthermore, dead-end lines exist within the system that require frequent flushing to prevent water quality degradation.

Randolph AFB purchases reclaimed water for use in irrigating the golf course. This irrigation system will be retained by the Air Force and is therefore not addressed by this analysis.

7.1.2 Inventory and System Value

Table 7.1.2-1 presents an inventory of the water distribution system, together with estimated system value in terms of replacement costs and depreciation rates. The inventory was taken from Base water system utility maps, as described in Section 1.3. Unit costs for each line item were then estimated based on a combination of sources listed in Section 1.3.6.

This inventory of facilities yields an overall calculated RCN value of approximately \$17,956,871 (see Table 7.1.2-1). Based on an estimate of installation dates and useful life for this type of equipment, the calculated RCNLD is approximately \$1,581,211.

7.2 Utility Requirements Assessment

7.2.1 Current and Future Water Demand

Randolph AFB currently has a peak water demand of 51 million gallons (MG) per month. This peak normally occurs in the summer. As noted in Section 1.2, key projects planned for Randolph will increase the total square footage of buildings on Base by less than 1 percent. Based on these plans, water demands are expected to stay at about their existing levels. Therefore, the capacity of the Randolph water system was evaluated based on current peak requirements.

7.2.2 System Capacity

The capacity of the Base potable water system is marginal for today's requirements and is expected to be inadequate in selected areas of the Base as new facilities are brought online. This determination is based on the results of fire hydrant flow tests performed in April and June of 1998. Texas Administrative Code (TAC), Chapter 290, Subchapter D requires water systems to be designed to maintain a minimum pressure of 35 psi under normal conditions and a minimum of 20 psi under combined fire and drinking water flow conditions. The hydrant flow tests indicate marginal performance at various locations across the Base. Table 7.2.2-1 presents the hydrant flow test data.

Hydrants 1040 and 1075 show marginal pressures, while the hydrant located near the high school demonstrated inadequate fire flow at marginal pressure. Required flows for schools are typically set between 2,000 and 2,500 gpm. Other areas of low pressure include the golf course and the riding stables.

TABLE 7.1.2-1Water Distribution Utility Inventory
Randolph AFB
USAF Utilities Privalization, Feasibility Analysis Report

	,			Approximate	Design	Estimated			Cost to Remedy Current	Depreciation	Weighted Depreciation
ltem	Size (in.)	Quantity	Unit	Year of Construction	Life (Years)	Unit Cost (\$)	RCN	RCNLD	Deficiencies (\$)	Rate (%)	Rate
PVC Pipe	(111.)	Qualitity	Ullit	Construction	(Tears)	(4)	(\$)	(\$)	(4)	(70)	(%)
PVCPipe	2	1,300	lf	1994	50	8.10	10,530	9,477	-	2.0%	0.0016%
	8	14,710	lf	1994	50	16.83	247,537	222,783	-	2.0%	0.0386%
	10	2,880	 If	1994	50	19.17	55,196	49,676	_	2.0%	0.0086%
	12	4,850	if	1994	50	21.97	106,556	95,900	16,320	2.0%	0.0166%
Ductile Iron Pipe		1,000			00	2	.00,000	00,000	.0,020	2.070	0.010070
2400	0.5	200	lf	1935	75	5.92	1,184	174	_	1.3%	0.0001%
	0.75	2,150	 If	1935	75	6.19	13,318	1,953	_	1.3%	0.0014%
	1	2,940	if	1935	75	6.54	19,219	2,819	_	1.3%	0.0020%
	1.25	1,480	lf	1935	75	6.97	10,308	1,512	_	1.3%	0.0011%
	1.5	2,620	lf	1935	75	7.50	19,650	2,882	_	1.3%	0.0020%
	1.75	130	lf	1935	75	8.10	1,053	154	_	1.3%	0.0001%
	2	12,780	lf	1935	75	8.10	103,518	15,183	_	1.3%	0.0108%
	2.5	650	lf	1935	75	8.29	5,387	790	_	1.3%	0.0006%
	3	2,360	lf	1935	75	9.26	21,860	3,206	_	1.3%	0.0023%
	4	5,160	lf	1935	75	9.31	48,060	7,049	-	1.3%	0.0050%
	6	1,580	if	1935	75	12.23	19,320	2,834	_	1.3%	0.0020%
	8	34,600	if	1935	75	16.83	582,241	85,395	-	1.3%	0.0606%
	10	14,130	 If	1935	75	33.19	468,979	68,784	-	1.3%	0.0488%
	12	26,580	 If	1935	75	40.29	1,070,916	157,068	-	1.3%	0.1114%
Cast Iron Pipe		20,000		1000	. 0	.0.20	1,010,010	101,000		1.070	0
Oddt Hoff Fibe	2	1,835	lf	1935	50	8.10	14,864	_	-	2.0%	0.0023%
	3	1,470	if	1935	50	9.26	13,616	-	-	2.0%	0.0021%
	4	1,770	lf	1935	50	9.31	16,486	-	-	2.0%	0.0026%
	6	65,650	lf	1935	50	12.23	802,754	-	-	2.0%	0.1252%
	8	53,604	lf	1935	50	16.83	902,036	-	-	2.0%	0.1407%
	10	1,100	lf	1935	50	19.17	21,082	-	-	2.0%	0.0033%
	12	1,810	lf	1935	50	40.29	72,925	-	-	2.0%	0.0114%
	14	3,780	lf	1935	50	49.00	185,231	-	-	2.0%	0.0289%
	16	930	lf	1935	50	56.60	52,641	-	-	2.0%	0.0082%
Copper Pipe	6	500	lf	1935	75	12.23	6,114	897	-	1.3%	0.0006%
a											
Steel Pipe	2	970	lf	1935	75	8.10	7,857	1,152	-	1.3%	0.0008%
	3	1,300	lf	1935	75	9.26	12,041	1,766	-	1.3%	0.0013%
Asbestos Cement Pipe a		,					,				
	4	2,640	lf	1965	50	9.31	24,589	7,868	-	2.0%	0.0038%
	8	600	lf	1965	50	16.83	10,097	3,231	-	2.0%	0.0016%
	12	3,170	lf	1965	50	40.29	127,720	40,870	-	2.0%	0.0199%
	16	610	lf	1965	50	56.60	34,528	11,049	_	2.0%	0.0054%

Cast Iron Gate Valve											
	2	9	ea	1935	25	220.00	1,980	-	-	4.0%	0.0006%
	3	13	ea	1935	25	410.00	5,330	-	-	4.0%	0.0017%
	4	4	ea	1935	25	715.00	2,860	-	-	4.0%	0.0009%
	6	99	ea	1935	25	840.00	83,160	-	-	4.0%	0.0259%
	8	122	ea	1935	25	970.00	118,340	-	-	4.0%	0.0369%
	10	2	ea	1935	25	1,360.00	2,720	-	-	4.0%	0.0008%
	12	15	ea	1935	25	1,520.00	22,800	-	15,200	4.0%	0.0071%
	14	5	ea	1935	25	4,520.00	22,600	-	-	4.0%	0.0071%
	16	693	ea	1935	25	5,900.00	4,088,700	-	-	4.0%	1.2757%
Fire Hydrants (4.5-inch Valve Size)		222	ea	1935	50	1,749.00	388,278	-	-	2.0%	0.0606%
Water Wells											
Fixed Cost Per Well		5	ea	1935	10	95,000.00	475,000	-	-	10.0%	0.3705%
Cost Per Foot Drilled		7,500	ft	1935	10	20.00	150,000	-	-	10.0%	0.1170%
Chlorination Facilities		5	ea	1994	5	13,750.00	68,750	-	-	20.0%	0.1073%
Elevated Storage Tanks (Total capacity in gal)		1,000,000	gal	1935	75	2.28	2,280,000	334,400	1,140,000	1.3%	0.2371%
SUBTOTAL							12,819,927	1,128,872	1,171,520		2.9210%
General Requirements		15	%				1,922,989	169,331	175,728		
SUBTOTAL							14,742,916	1,298,203	1,347,248		
Contingency		5	%				737,146	64,910	134,725		
CONSTRUCTION TOTAL							15,480,061	1,363,113	1,481,973		
Engineering		10	%				1,548,006	136,311	148,197		
Services During Construction		6	%				928,804	81,787	88,918		
TOTAL							17,956,871	1,581,211	1,719,088		

a Unit cost estimate based on replacement by PVC for sizes up to 10 inches and by ductile iron for larger pipes.

Notes:

Quantity estimates based on take-offs from Base utility maps.

All costs are in February 1999 dollars. Costs estimated at order of magnitude level.

RCNLD = replacement cost new less depreciation ft = feet

PVC = polyvinyl chloride ea = each

^b 10 percent contingency used to remedy any current deficiencies.

TABLE 7.2.2-1Fire Hydrant Flow Test Data for April and June 1998
Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

Hydrant Number or Location	Test Date	Residual Pressure (psi)	Flow (gpm)
Home and Garden Center	2 June 1998	35	1,594
1040	14 April 1998	26	1,670
891, 895, 863	14 April 1998	42	3,027
1070, 1073	14 April 1998	33	1,706
High School	14 April 1998	21	797
1075	14 April 1998	26	1,668
1013	14 April 1998	32	906
62, 61	14 April 1998	38	1,967
900,636, 901	14 April 1998	44	1,904
40, 41 , 42	14 April 1998	46	3,276
3, 4, 5, 6, 7	14 April 1998	28	2,467

Data taken from Air Force Form 1027, dated 2 June 1998 and 14 April 1998.

7.2.3 Off-Installation Utility Capabilities

The San Antonio Water System (SAWS) is the only potable water purveyor that has the capability of providing water in sufficient quantities and at sufficient pressures to satisfy Base demands without using the existing water wells. Other local purveyors, such as the Cibolo Creek Municipal Authority and Bexar Metropolitan Water District, must either use on-Base systems or construct local pressure maintenance facilities and delivery systems to provide potable water to the Base.

SAWS is the purveyor of water in areas surrounding Randolph AFB. A brief analysis was conducted to assess whether it might be economic to have SAWS provide water to the Base rather than using the existing wells. The tabulation below presents a preliminary economic analysis that compares the cost of purchased water to continuation of the existing system. The cost of purchased water was estimated by multiplying estimated FY 1998 water usage by an average unit cost of water that would be charged to the Base based on SAWS current rate schedules. The cost of providing water using the Base's current system was estimated by adding the status quo operating costs (Section 7.6.1) to the estimated cost of renewals and replacements.

⁷ Estimated water usage was estimated by multiplying the Base's peak month consumption by the ratio of total annual consumption to peak monthly consumption from Goodfellow AFB.

Scenario 1. Close Wells and Purchase Water from SAWS

Annual Usage (1000 gal)	303,000
Estimated SAWS Unit Cost (\$/1000 gal)	\$1,146
Estimated Cost of Purchased Water	\$347,137

Scenario 2. Continue Use of Wells

Status Quo Operating Costs	\$133,151
Annual Renewals and Replacements	\$124,644
Annual Cost of Existing System	\$257,795

As shown, continued on-base water production appears to be less expensive than purchasing Lackland's water supply from off base.

Existing on-Base wells have the capability of supplying off-Base areas with potable water. These wells have excess capacity; however, upgrades to existing pumping, chlorination, and fluoridation facilities would be needed to serve off-Base users. In addition, as noted above, SAWS water supply appears to be significantly less costly than that from Randolph AFB wells.

7.3 Operational Impact Analysis Summary

As discussed in Section 3.0, the ORM workshop results indicate that, with control measures, all risks associated with privatization of the Randolph AFB utilities would be ranked as "medium" or "low" and within the Air Force tolerance for privatization risk.

Randolph AFB supplies and treats its own water, and the potential risks identified for water system privatization include loss of security at the treatment plant and liability for environmental noncompliance. These risks were categorized as "medium" without control measures and "medium" or "low" with implementation of control measures. Other potential risks associated with privatizing the Base utilities in general (e.g., mission degradation due to decreased reliability) are also assumed to apply to the water supply system. These risks were ranked as "high" or "medium" without control measures and would likely be reduced to "medium" or "low" with control measures.

7.4 Regulatory Review

Based on the findings of the regulatory analysis summarized in Section 4.0, the Randolph AFB water system is open to competitive bidding. The Base is not within an existing water CCN, but is located adjacent to water CCN No. 10701 held by the City of Converse and water CCN No. 10645 held by the City of Schertz.

7.5 Market Analysis Summary

Section 2.0 presents the overall market analysis for Randolph AFB. The conclusions of this analysis that pertain specifically to the water distribution system are as follows:

- Six companies—two public utilities (SAWS and CPS) and four privately owned utility companies—express interest in purchasing the water and wastewater systems at Randolph AFB. Considerable competition for these systems is therefore likely.
- Four companies demonstrated interest in bundling the Randolph water system with all available utilities at the seven bases addressed by the TRDP. The other companies express interest in acquiring the Randolph system in addition to the water and wastewater systems at other bases.
- SAWS proposes basing its service rates on its existing rate schedule, and noted that it is reevaluating its rate structure and may eliminate the current "Inside City Limit" (ICL) and "Outside City Limit" (OCL) differential in 1999. The other companies propose developing custom rates for on-base water service
- Four of the six companies interested in the Randolph AFB water system address conjunctive metering or billing in their responses. The responses generally indicate that metering and billing should be examined on a case-by-case basis. SAWS and one other company (U.S Filter-MK) propose increasing water metering to quantify utility usage separately at various Base facilities, and to focus on high-use facilities to facilitate water conservation.
- The six interested companies provide some discussion of purchase price options. Some companies propose more than one option, and most of the companies' responses indicate flexibility in how a purchase price should be determined.

7.6 Preliminary Economic Analysis

This section presents the results of the economic analysis of privatizing the water system at Randolph AFB. The analysis includes the following elements:

- Status Quo Costs. These are the estimated operating and capital costs incurred today by the Air Force to operate the system. Estimates are also provided for the cost to remedy current deficiencies, the cost of renewals and replacements, and adjustments to current costs to properly sustain the system over the long term.
- Privatized Costs. This section estimates operating and capital costs likely to be incurred
 by a private operator of the system. It was assumed that the private utility provider
 would pass these costs on to the Air Force in rate charges. In addition to these rate
 charges, Air Force costs were included for transition to private ownership and for Air
 Force management of the utility service provider after the ownership transition is
 complete.
- Life Cycle Cost Comparison. Estimated 25-year cash flows are shown for status quo costs and privatized costs. The cash flows are discounted and the present value of the costs compared. This comparison shows estimated savings or added costs that are projected to result from privatization.

7.6.1 Status Quo Costs

Status Quo Operating Cost

The water distribution and water plant utility operating cost for the status quo at Randolph AFB was estimated as shown in Table 7.6.1-1. These costs were developed using the general approach described in Section 1.3.

The status quo cost of operating and maintaining the water distribution system at Randolph AFB is \$113,820; general and administrative costs are estimated to be \$26,179, bringing the total operating cost to \$139,998.

The status quo cost of operating and maintaining the water plant is \$108,253; general and administrative costs are estimated to be \$24,898, bringing the total operating cost to \$133,151.

The total status quo cost of operating the water utility at Randolph AFB (including water distribution and water plant) is \$273,149.

Status Quo Capital Cost

Cost to Remedy Current Deficiencies

Conversations with Base personnel indicated that selective replacement of approximately 4,900 linear feet of 12-inch water main and its associated valves is required to restore the water system to minimum standards. In addition, it was noted the 500,000-gallon water storage tank located in the Taj Mahal does not fully comply with current state standards, but its impact on system pressures is marginal. Therefore, replacement of this tank in its entirety is proposed. The estimated cost to remedy all current deficiencies is approximately \$1,719,088 (including general requirements, contingency, engineering, and services during construction; see Table 7.1.2-1).

Renewal and Replacement Costs

It is assumed that the improvements discussed in the previous section will be constructed and that the system will be restored to minimum standards. Upon completion of these projects, routine renewals and replacements will occur at the average annual depreciation rate for the water system at Randolph AFB, shown in Table 7.1.2-1 as 2.921 percent. Therefore, the annual renewal and replacement cost will be about \$524,520 (2.921 percent times the system RCN of \$17,956,871). This equals approximately \$545,233 in year 2001 dollars.

TABLE 7.6.1-1Estimated Water Distribution and Water Plant Utility Operating Costs for Status Quo Alternative *Randolph AFB*USAF Utilities Privatization, Feasibility Analysis Report

	Water Dist	ribution	Water Plant		
_	Hourly	Annual	Hourly	Annua	
Cost Component	Data	Cost	Data	Cost	
Operation and Maintenance Cost (\$)					
Costs Available on Cost-per-Hour Basis					
Adjusted Shop Rate (Hourly Rate)					
LaborMilitary	\$1.62		\$1.62		
LaborCivilian	17.70		17.70		
Civilian Benefits	6.99		6.99		
Incremental Direct Costs	3.08		3.08		
Indirect Materials	0.42		0.42		
Vehicles	0.28		0.45		
Facilities	0.05				
Total Hourly Rate	\$30.15		\$30.27		
Annual Labor Requirements (hours)					
Full Time = 2080 hours					
Full Time					
Military					
Positions	-		-		
Utilization	-		-		
Total Hours	-		-		
Civilian					
Positions	-		-		
Utilization	-		-		
Total Hours	-		-		
Part Time					
Military					
Positions	2.5		-		
Utilization	33%		-		
Total Hours	1,716		-		
Civilian					
Positions	3		2		
Utilization	33%		75%		
Total Hours	2,059		3,120		
Total Annual Labor Requirements	3,775		3,120		

\$113,820

Total Costs (hourly rate times annual labor rqmt)

\$94,434

TABLE 7.6.1-1 Estimated Water Distribution and Water Plant Utility Operating Costs for Status Quo Alternative *Randolph AFB*

USAF Utilities Privatization, Feasibility Analysis Report

	Water Dis	stribution	Water Plant		
	Hourly	Annual	Hourly	Annual	
Cost Component	Data	Cost	Data	Cost	
Costs Available on Annual Cost Basis					
Direct Materials		=		13,819	
Project Contracts		-		-	
Service Contracts		=		=	
Environmental Compliance		-		-	
Supporting Utilities		<u> </u>			
Total Costs		\$0		13,819	
Total Operation and Maintenance Cost		\$113,820		\$108,253	
General and Administrative (23%)		26,179		24,898	
Total Operating Cost		\$139,998		133,151	
Total Operating Coats Water Distribution				¢420.000	
Total Operating Costs Water Distribution				\$139,998	
Total Operating Costs Water Plant				133,151	
Total Operating Costs for Water Utility				\$273,149	

Adjustment to Status Quo Costs

Upon completion of the required replacement projects, maintenance requirements are expected to become less. The workload for existing staff should decrease to levels commensurate with the capabilities of existing staff. Therefore, no adjustments to the status quo costs are necessary.

7.6.2 Privatization Costs

Utility Operating Cost

A local utility, such as SAWS, could consolidate the Base water system into their existing water system operation and maintenance. Base water facilities, such as pump stations, tanks, and treatment equipment, would be placed on the utility's recurring work program, and an operator would check these systems every day. Emergencies such as line breaks or service interruptions would require Base personnel to contact the utility's service coordinator who would come to the site to evaluate the problem. The service coordinator would then mobilize the utility's emergency work crews to correct the deficiency and restore service.

Remote owners would find it necessary to place someone on the Base in either a part-time or full-time capacity to monitor and act as a service coordinator in the event of a service interruption. Repair work would be done either through the remote owner's own forces or through maintenance and service contracts with local providers. The vehicle through which repair work is done would depend upon the density of systems for which the owner is responsible. In areas where the density is high, it is likely that the owner would have its own repair crews. In areas where the density is low, it is reasonable to assume that a remote owner would rely on service contracts.

A comparison of the above types of service providers indicates that the least operating cost scenario for the potable water system at Randolph AFB would be provided by a local water utility such as SAWS. They have the ability to allocate the cost of maintaining Base infrastructure to their entire system. The estimated privatized annual operating cost of the water system would be about \$66,392 per year, as shown in Table 7.6.2-1.

The cost estimate for a privatized operation is based on a staff of 0.85 FTE for operation and maintenance (O&M) of the potable water system. This assumes seven persons working part time. The general and administrative (G&A) costs were estimated at 23 percent of the total costs. An allowance of \$14,000 was included for direct material costs. The hourly labor rate was adjusted to include benefits, indirect material costs, vehicle costs, and facility costs.

As noted in Section 3.2, the Air Force has specified use of the Maxwell AFB required response times for utility service interruptions and repairs as guidelines for this Feasibility Analysis (see Volume II, Section 3.0). These requirements are comparable to those for a typical utility system; therefore, no additional costs associated with operational risk mitigation have been included in the privatized utility operating cost.

TABLE 7.6.2-1 Estimated Water Distribution System Service Costs for Private Operator Randolph AFB USAF Utilities Privatization, Feasibility Analysis Report

Operation and Maintenance Cost

			Repair				
	System	Service	Crew	Truck	Backhoe		
Costs Available on Cost-per-Hour Basis	Operator	Coordinator	Foreman	Driver	Operator	Laborer 1	Laborer 2
Labor, Including Benefits at 15%	\$19.50	\$25.00	\$22.00	\$16.00	\$18.00	\$15.00	\$15.00
Incremental Direct Costs	3.08	3.08	3.08	3.08	3.08	3.08	3.08
Indirect Materials	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Vehicles	0.35	0.35	0.35	0.35	0.35		
Facilities	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Subtotal	\$23.40	\$28.90	\$25.90	\$19.90	\$21.90	\$18.55	\$18.55

Annual Labor Requirements (hours) Full Time (2080 hours) None required

			Repair				
	System	Service	Crew	Truck	Backhoe		
Part Time	Operator	Coordinator	Foreman	Driver	Operator	Laborer 1	Laborer 2
FTE	0.25	0.1	0.1	0.1	0.1	0.1	0.1
Annual Hours	520	208	208	208	208	208	208
Extended Labor Cost	\$12,168	\$6,011	\$5,387	\$4,139	\$4,555	\$3,858	\$3,858
Total	\$39,978						
Costs Available on Annual Cost Basis Direct Materials (\$)	14,000	-					
Total Operation and Maintenance Cost	\$53,978						
General and Administrative Costs (23%)	12,415	-					
Total Operating Cost	\$66,392						

Utility Capital Cost

As noted above, the capital cost estimates for the status quo were projected on the basis of investments needed to put the utility system in good condition and maintain that condition for the long term. For the purposes of this preliminary economic analysis, it was assumed that these investments would be the same as those that would likely be made by a private utility provider.

Air Force Transition and Post-Award Administrative Costs

The Air Force will incur a number of costs in the process of privatizing its utility systems. Transition costs will include employee costs, such as severance costs and relocation costs, and activities needed to transfer functions to the new owner.

The Air Force has determined that employee transition and system transfer costs cannot be quantified with any certainty. As a result, the IPT concluded that these costs should not be included in the feasibility analysis. These costs will be become clearer as part of Phase III and will be included in the Certified Economic Analysis conducted in that phase of the privatization process.

Under private operation of the utility system, the Air Force would also incur costs to oversee the program. Activities associated with the oversight function would include meter reading, quality assurance, and contract compliance review. For the purpose of this analysis, it is assumed that this function will require 0.25 FTE or \$12,500 annually.

Costs to Meter On-Base Facilities Not Currently Metered

The Air Force, regardless of whether or not it privatizes the water system, may decide to meter all on-base water system end users. Randolph AFB currently has 691 buildings and 33 water meters, and would therefore require an additional 658 meters (assuming one meter per building; Volume II, Section 7.0 presents a table showing the breakdown of meters and costs for each TRDP base). These meters would likely range from ¾-inch- to 2-inch-diameter for housing buildings, and 3-inch-diameter for other buildings. The estimated installed costs per meter range from \$155 to \$3,425, depending on size. Assuming that half of the 658 buildings requiring meters are used for housing, and that the housing buildings are further subdivided by size, the estimated total cost for all additional meters is approximately \$1.23 million.

Because utility regulators and most parties interested in acquiring the system are open to conjunctively metered service, installation of meters at end uses, although beneficial, is probably not necessary. If the Air Force decides that meters should be installed, it is assumed that they would be installed under both the status quo and privatization alternatives. Because the costs would therefore be the same for both alternatives, they were excluded from the life-cycle cost analysis.

7.6.3 Life-Cycle Cost Comparison

A life-cycle cost comparison of the status quo and the privatization alternative is shown in Table 7.6.3-1 and is summarized as follows:

	Present Value (\$)	Savings (\$)	Savings (%)
Air Force Adjusted Status Quo	16,811,046		
Privatized Utility Public Owner	13,152,225	3,658,821	21.8
Private Owner	16,555,017	256,028	1.5

As shown, the results of the preliminary economic analysis are that privatization of the Randolph AFB water system would be economic for the Air Force. Privatization potentially represents savings of as much as \$3,658,821, or 21.8 percent.

These results are based on the present value of the status quo and privatized costs over a 25-year period. Cash flows for both the adjusted status quo and privatized cases were forecast based on cost analyses described above. The present value of costs is calculated by discounting the stream of annual costs at a 2.9 percent real discount rate. This is the 30-year real interest rate on treasury notes and bonds as specified in OMB Circular No. A-94 (February 1999).

The present value of privatized costs differs depending on whether the owner is a public or a private utility. This results from the different cost of capital associated with financing routine renewals and replacements. The basis for including these differences in the present value calculations is discussed in Section 1.3.

7.7 Water System Conclusions

Privatization of the water distribution system at Randolph AFB is feasible, based on the findings of this report in the areas of market interest, operational impacts, the Texas regulatory environment, system conditions, and preliminary economics. The final feasibility of privatizing this system will not be known with certainty until the end of Phase III. At that time the actual bids from prospective system purchasers will be evaluated as part of the Air Force source selection process, and the final economic analysis will be certified. However, there is enough promise shown in the findings of this preliminary analysis to justify proceeding to Phase II of the Air Force privatization process.

TABLE 7.6.3-1Water Utility
Life Cycle Cost Comparison of Status Quo vs. Privatization Alternatives
Randolph AFB

USAF Utilities Privatization Feasibility Analysis Report

	Present	Estimated A	Actual (\$)					Foreca	st (\$)						
	(2001 do	ollars)	1998	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Air Force Status Quo Costs Operating Capital	5,144,	757	273,149		283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	
Remedies for Current Deficiencies	1,786,	975	1,719,088		1,786,975										
Routine Renewals and Replacements	9,879,	313	524,520		545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	
Total Air Force Costs	16,811	,046			2,616,144	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	
	Own	er													
Privatized Costs	Public	Private													
Net Utility Provider Costs to be Recovered in Rate Operating Capital	1,250,499	1,250,499	66,392		69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	
Remedies for Current Deficiencies Routine Renewals and Replacements	1,786,975 9,879,313	2,308,195 12,760,886	1,719,088		1,786,975 545,233	- 545,233	- 545.233	- 545,233							
Air Force Management Air Force Program Oversight Transition Costs	235,437	235,437	12,500		12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	
Total Privatized Cost	13,152,225	16,555,017			2,414,216	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	
Savings (\$) Savings (%)	3,658,821 21.8%	256,028 1.5%			201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	

Notes:

FTE= Full Time Equivalent

Assumptions:

From Mid-year 1998 to Mid-year 1999 0.80% From Mid-year 1999 to Mid-year 2000 1.50% From Mid-year 2000 to Mid-year 2001 1.60% Private Cost of Capital (real, after tax) 5.00% Federal/Public Cost of Capital (real) 2.90% Implicit Financing Period (Years) 30 FTE for Privatization Oversight 0.25 \$ 50,000 Annual Cost per FTE

^{1.} Estimated actual costs in 1998 dollars; all other costs in 2001 dollars.

^{2.} All costs after both corporate and individual Federal income tax.

TABLE 7.6.3-1
Water Utility
Life Cycle Cost Comparison of Status Quo vs. Privatization Alternatives
Randolph AFB
USAF Utilities Privatization Feasibility Analysis Report

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Air Force Status Quo Costs															
Operating Capital	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936	283,936
Remedies for Current Deficiencies Routine Renewals and Replacements	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233	545,233
Total Air Force Costs	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169	829,169
Privatized Costs															
Net Utility Provider Costs to be Recovered in Rate Operating Capital	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014	69,014
Remedies for Current Deficiencies Routine Renewals and Replacements	- 545,233														
Air Force Management Air Force Program Oversight (FAS) Transition Costs	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994
Total Privatized Cost	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241	627,241
Savings (\$) Savings (%)	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928	201,928

8.0 Wastewater Collection System Analysis

8.1 System Overview

8.1.1 Description

The wastewater system at Randolph AFB is only a collection system with no treatment facilities. The wastewater from the system is treated by the Cibolo Creek Municipal Authority. The collection system consists of underground service lines that vary in diameter from 6 to 10 inches, with three on-Base wastewater lift stations. Two of the lift stations contain two self-priming pumps that have a discharge diameter of 4 inches. The other lift station also has two self-priming pumps, but has a 3-inch discharge diameter. On-Base sewage either flows to or is pumped to a large lift station that is owned, operated, and maintained by the municipal treatment authority. There are two septic systems on-Base, and these provide service to toilet facilities located at the golf course.

The collection pipe in the sanitary sewer system is generally in poor condition. The predominant pipe material is vitrified clay pipe (VCP) that was installed in the 1920s/1930s. Television surveys of this pipe indicate that a significant portion of the clay tiles are broken and that gaps exist in underground lines. Further evidence of the poor condition of the collection system can be seen in the flow records of the municipal treatment authority's lift station. During periods of wet weather, flow into the lift station increases substantially, which results in higher treatment costs that are charged directly of the Base. It should also be noted that groundwater levels at the Base range between 12 and 13 feet below ground. VCP sewer lines that extend to this depth are subject to continuous inflow that also leads to higher treatment costs.

Some of the sewer lines have been replaced with polyvinyl chloride (PVC) pipe, mostly in the Base housing area and along the service road to the flight line. The construction quality of the new sewer lines is questionable. Television surveys indicate that the installation contractor failed to maintain grade. As a result, the new lines have numerous low spots or sags between manholes that will lead to decreased flow velocities, increased solids deposition, and more frequent maintenance. Also, onsite inspection during this survey indicated that insufficient compaction most likely occurred during backfill, because failure of the street pavement is evident along the route of the sewer.

Most of the sewer manholes are constructed of bricks and are also in poor condition. Coatings designed to enhance watertightness were installed on some manholes approximately 5 years ago. The coatings, however, have failed to adhere to the brick and do not prevent infiltration or exfiltration. Furthermore, manhole steps installed during original construction are severely corroded and unserviceable.

8.1.2 Inventory and System Value

Table 8.1.2-1 presents an inventory of the wastewater collection system, together with estimated system value in terms of replacement costs and depreciation rates. The inventory was taken from Base data, which were then checked against Base water system utility maps, as described in Section 1.3. Unit costs for each line item were estimated based on a combination of the sources listed in Section 1.3.6.

This inventory of facilities yields an overall calculated RCN value of approximately \$3,320,826 (see Table 8.1.2-1). Based on estimated installation dates and useful life for this type of equipment, the calculated RCNLD is approximately \$504,999.

8.2 Utility Requirements Assessment

8.2.1 Current and Future Wastewater System Demand

Randolph AFB currently has a peak wastewater demand of 19.5 million gallons (MG) per month. As noted in Section 1.2, key projects planned for Randolph will increase the total square footage of buildings on Base by less than 1 percent. Based on these plans, wastewater demands are expected to stay at about their existing levels. Therefore, the capacity of the Randolph wastewater system was evaluated based on current peak requirements.

8.2.2 System Capacity

The lift station pumping capacity for Randolph AFB is sufficient for projected requirements. The maintenance history of the existing facilities demonstrates satisfactory performance, and there is no indication that future performance will degrade even if moderate increases in system flow occur. However, it is recommended that capacity reviews be performed if new connections are made.

Collection system capacities are marginal, and isolated overflows can be expected during periods of wet weather. System capacities are limited by poor pipe condition and insufficient grade in some of the new installations. Studies on flow capacity have been performed and system choke points identified; however, funding constraints have prevented execution of remediation projects.

8.2.3 Off-Installation Utility Capacity

Cibolo Creek Municipal Authority currently provides wastewater treatment services for the Base. Service is provided by its lift station and associated treatment plant. The capacities of these facilities are sufficient for the loads from the Base.

Other providers of wastewater treatment services in the area include the San Antonio Water System and the San Antonio River Authority. The ability of these providers, however, is limited by their lack of either pumping facilities or treatment facilities in the immediate area surrounding the Base. Substantial investment will be required by each of these organizations to create the infrastructure necessary to provide appropriate levels of service.

TABLE 8.1.2-1
Wastewater Collection System Inventory
Randolph AFB
USAF Utilities Privatization, Feasibility Analysis Report

									Cost to Remedy		Weighted
	Size			Approximate Year of	Design Life	Estimated Unit Cost	RCN	RCNLD	Current Deficiencies	Depreciation Rate	Depreciation Rate
<u>Item</u>	(in.)	Quantity	Unit	Construction	(Years)	(\$)	(\$)	(\$)	(\$)	(%)	(%)
PVC Pipe											
	6	1,130	lf	1994	50	12.10	13,676	12,309	-	2.0%	0.0115%
	8	1,930	lf	1994	50	11.63	22,442	20,197	-	2.0%	0.0189%
	10	1,300	lf	1994	50	13.89	18,057	16,252	-	2.0%	0.0152%
	12	1,360	lf	1994	50	16.32	22,189	19,970	-	2.0%	0.0187%
	15	1,620	If	1994	50	23.88	38,682	34,814	-	2.0%	0.0326%
PVC Pipe (Forced Mains)	6	8,170	lf	1994	50	12.10	98,880	88,992	-	2.0%	0.0834%
Vitrified Clav Pipe											
	4	30,950	lf	1929	50	8.94	276,659		\$ 207,524	2.0%	0.2334%
	6	43,000	If	1929	50	12.10	520,419	-	\$ 390,225	2.0%	0.4390%
	8	18,830	If	1929	50	11.63	218,951	-	\$ 164,251	2.0%	0.1847%
	10	1,580	lf	1929	50	13.89	21,947	-	\$ 16,460	2.0%	0.0185%
	12	850	If	1929	50	16.32	13,868	-	\$ 10,412	2.0%	0.0117%
	14	4,790	If	1929	50	19.11	91,532	-	\$ 68,662	2.0%	0.0772%
	15	4,790	lf	1929	50	23.88	114,375	-	\$ 85,801	2.0%	0.0965%
Concrete Pipe											
	6	800	lf	1929	50	15.37	12,292		\$ 9,222	2.0%	0.0104%
	8	11,500	lf	1929	50	16.88	194,094		\$ 145,590	2.0%	0.1637%
	10	3,080	lf	1929	50	17.65	54,371	-	\$ 4,077	2.0%	0.0459%
Standard Sanitary Sewer Manholes		400	ea	1929	40	1,146.00	458,400	-	-	2.5%	0.4834%
Wastewater Lift/Pump Stations		3	ea	1995	60	60,000.00	180,000	168,000	-	1.7%	0.1265%
SUBTOTAL							2,370,833	360,533	1,102,224	ŀ	2.0714%
General Requirements		15	%				355,625	54,080	165,334		
SUBTOTAL							2,726,458	414,613	1,267,558	3	
Contingency ^D		5	%				136,323	20,731	126,756	5	
CONSTRUCTION TOTAL							2,862,781	435,344	1,394,313	3	
Engineering		10	%				286,278	43,534	139,431		
Services During Construction		6	%				171,767	26,121	83,659)	
TOTAL							3,320,826	504,999	1,617,403	}	

^a Unit cost estimate based on replacement by PVC pipe.

Notes:

Quantity estimates based on take-offs from Base utility maps.

All costs are in February 1999 dollars. Costs estimated at order of magnitude level.

RCN = replacement cost new

RCNLD = replacement cost new less depreciation

PVC = polyvinyl chloride

If = linear feet

ea = each

^b 10 percent contingency used to remedy any current deficiencies.

Randolph AFB has no capability for providing wastewater collection or treatment services for off-Base facilities.

8.3 Operational Impact Analysis Summary

As discussed in Section 3.0, the ORM workshop results indicate that, with control measures, all risks associated with privatization of the Randolph AFB utilities would be ranked as "medium" or "low" and within the Air Force tolerance for privatization risk.

No potential privatization risks were identified specifically for the wastewater system. However, liability for environmental noncompliance and other potential risks associated with privatizing the Base utilities in general (e.g., mission degradation due to decreased reliability and slower response times) are assumed to apply to the wastewater system. These risks were ranked as "high" or "medium" without control measures and would likely be reduced to "medium" or "low" with control measures (e.g., requiring stringent performance standards and response times on the part of the wastewater utility provider).

8.4 Regulatory Review

Based on the findings of the regulatory analysis summarized in Section 4.0, the Randolph AFB wastewater system is open to competitive bidding. The Base is not within an existing sewer CCN.

8.5 Market Analysis Summary

Section 2.0 presents the overall market analysis for Randolph AFB. The conclusions of this analysis that pertain specifically to the wastewater system are as follows:

- Six companies—two public utilities (SAWS and CPS) and four privately owned utility companies—express interest in purchasing the wastewater system at Randolph AFB. Considerable competition for these systems is therefore likely. CCMA, the current wastewater service provider, owns and maintains the lift station at Randolph AFB but not the remainder of the wastewater conveyance infrastructure. CCMA indicates that it has no staff or equipment to maintain the wastewater conveyance system, but would consider providing wastewater service if no other company or municipality were interested.
- Four companies demonstrated interest in bundling the Randolph wastewater system with all available utilities at the seven bases addressed by the TRDP. The other companies express interest in acquiring the Randolph system in addition to the water and wastewater systems at other bases.
- SAWS proposes basing its service rates on its existing rate schedule, and noted that it is reevaluating its rate structure and may eliminate the current "Inside City Limit" (ICL) and "Outside City Limit" (OCL) differential in 1999. The other companies propose developing custom rates for on-base wastewater service.

- Four of the six companies interested in the Randolph AFB wastewater system address conjunctive metering or billing in their responses. The responses generally indicate that metering and billing should be examined on a case-by-case basis. Two companies (SAWS and U.S. Filter-MK) propose increasing water metering to quantify utility usage separately at various Base facilities, and to focus on high-use facilities to facilitate water conservation. Wastewater billing is typically based on water usage, and one company (U.S. Filter-MK) notes that this would be the case.
- The six interested companies provide some discussion of purchase price options. Some companies propose more than one option, and most of the companies' responses indicate flexibility in how a purchase price should be determined.

8.6 Preliminary Economic Analysis

This section presents the results of the economic analysis of privatizing the wastewater collection system at Randolph AFB. The analysis includes the following elements:

- Status Quo Costs. These are the estimated operating and capital costs incurred today by the Air Force to operate the system. Estimates are also provided for the cost to remedy current deficiencies, the cost of renewals and replacements, and adjustments to current costs to properly sustain the system over the long term.
- Privatized Costs. This section estimates operating and capital costs likely to be incurred
 by a private operator of the system. It was assumed that the private utility provider
 would pass these costs on to the Air Force in rate charges. In addition to these rate
 charges, Air Force costs were included for transition to private ownership and for Air
 Force management of the utility service provider after the ownership transition is
 complete.
- Life Cycle Cost Comparison. Estimated 25-year cash flows are shown for status quo costs and privatized costs. The cash flows are discounted and the present value of the costs compared. This comparison shows estimated savings or added costs that are projected to result from privatization.

8.6.1 Status Quo Costs

Status Quo Operating Cost

The wastewater distribution utility operating cost for the status quo at Randolph AFB was estimated as shown in Table 8.6.1-1. These costs were developed using the general approach described in Section 1.3.

The status quo cost of operating and maintaining the wastewater distribution system at Randolph AFB is \$114,990; general and administrative costs are estimated to be \$17,249, bringing the total operating cost to \$132,239.

TABLE 8.6.1-1Estimated Wastewater Collection System Operating Costs for Status Quo Alternative *Randolph AFB*USAF Utilities Privatization, Feasibility Analysis Report

	Status	Quo
	Hourly	Annual
Cost Component	Data	Cost
Operation and Maintenance Cost (\$)		
Costs Available on Cost-per-Hour Basis		
Adjusted Shop Rate (Hourly Rate)		
LaborMilitary	\$1.62	
LaborCivilian	پر 17.70	
Civilian Benefits		
Incremental Direct Costs	6.99 3.08	
Indirect Materials	0.42	
Vehicles Facilities	0.59 0.05	
Total Hourly Rate	\$30.46	
Annual Labor Requirements (hours)		
Full Time		
Military		
Positions	-	
Utilization	-	
Hours	-	
Civilian		
Positions	-	
Utilization	-	
Hours	-	
Part Time		
Military		
Positions	2.5	
Utilization	33%	
Hours	1,716	
Civilian		
Positions	3	
Utilization	33%	
Hours	2,059	
Total Annual Labor Requirements	3,775	
Total Costs (hourly rate times annual labor rqmt)	0,170	\$114,990
Total Good (Hours) rate arrived arrived regions		ψ111,000
Costs Available on Annual Cost Basis		
Direct Materials		_
Project Contracts		_
Service Contracts		_
Environmental Compliance		_
Supporting Utilities		_
Total Costs		\$0
Total Operation and Maintenance Cost		\$114,990
General and Administrative Cost (15%)	<u>-</u>	17,249
		\$132,239
Total Operating Cost		φ132,239

Status Quo Capital Cost

Cost to Remedy Current Deficiencies

As noted in Section 8.1.1, the sanitary sewer system at Randolph AFB is generally in poor condition. Replacement of the aging vitrified clay and concrete pipe is required to restore the wastewater system to minimum standards. The estimated cost to remedy all current deficiencies is approximately \$1,617,403 (including general requirements, contingency, engineering, and services during construction; see Table 8.1.2-1).

Renewal and Replacement Costs

It is assumed that the improvements discussed in the previous section will be constructed and that the system will be restored to minimum standards. Upon completion of these projects, routine renewals and replacements will occur at the average annual depreciation rate for the wastewater system at Randolph AFB, shown in Table 8.1.2-1 as 2.0714 percent. Therefore, the annual renewal and replacement cost will be about \$68,787 (2.0714 percent times the system RCN of \$3,320,826). This equals approximately \$71,503 in year 2001 dollars.

Adjustments to Status Quo Costs

The current workload level for maintenance is commensurate with the capabilities of existing staff. Therefore, no adjustments to the status quo costs are necessary.

8.6.2 Privatization Costs

Utility Operating Cost

A local wastewater utility, such as SAWS, could consolidate the Base wastewater system into their existing collection system operation. System operation and maintenance would be incorporated into the workload of existing staff. Base water facilities, such as lift stations and treatment equipment, would be automated and placed on the utility's recurring work program. An operator would check these systems every day. Emergencies such as line breaks or service interruptions would require Base personnel to contact the utility's service coordinator, who would come to the site to evaluate the problem. The service coordinator would then mobilize the utility's emergency work crews to correct the deficiency and restore service.

Remote owners would find it necessary to place someone on the Base either in a part-time or full-time capacity to monitor and act as a service coordinator in the event of a service interruption. Repair work would be done either through the remote owner's own forces or through maintenance and service contracts with local providers. The vehicle through which repair work is done would depend upon the density of systems for which the owner is responsible. In areas where the density is high, it is likely that the owner would have its own repair crews. In areas where the density is low, it is reasonable to assume that the owner would rely on service contracts.

A comparison of the above types of service providers indicates that the least operating cost scenario for the wastewater collection system at Randolph AFB would be provided by a local municipal wastewater utility such as SAWS. They have the ability to allocate the cost of maintaining Base infrastructure to their entire system. The estimated privatized annual

operating cost of the wastewater collection system would be about \$63,452 per year, as shown in Table 8.6.2-1.

The cost estimate for a privatized operation is based on a staff of 0.5 FTE for operation and maintenance (O&M) of the wastewater system. This assumes seven persons working part time. The general and administrative (G&A) costs were estimated at 15 percent of the total costs. An allowance of about \$22,245 was included for direct material costs. The hourly labor rate was adjusted to include benefits, indirect material costs, vehicle costs, and facility costs.

As noted in Section 3.2, the Air Force has specified use of the Maxwell AFB required response times for utility service interruptions and repairs as guidelines for this Feasibility Analysis (see Volume II, Section 3.0). These requirements are comparable to those for a typical utility system; therefore, no additional costs associated with operational risk mitigation have been included in the privatized utility operating cost.

Utility Capital Cost

As noted above, the capital cost estimates for the status quo were projected on the basis of investments needed to put the utility system in good condition and maintain that condition for the long term. For the purposes of this preliminary economic analysis, it was assumed that these investments would be the same as those that would likely be made by a private utility provider.

Air Force Transition and Post-Award Administrative Costs

The Air Force will incur a number of costs in the process of privatizing its utility systems. Transition costs will include employee costs, such as severance costs and relocation costs, and activities needed to transfer functions to the new owner.

The Air Force has determined that employee transition and system transfer costs cannot be quantified with any certainty. As a result, the IPT concluded that these costs should not be included in the feasibility analysis. These costs will be become clearer as part of Phase III and will be included in the Certified Economic Analysis conducted in that phase of the privatization process.

Under private operation of the utility system, the Air Force would also incur costs to oversee the program. Activities associated with the oversight function would include meter reading, quality assurance, and contract compliance review. For the purpose of this analysis, it is assumed that this function will require 0.25 FTE or \$12,500 annually.

Costs to Meter On-Base Facilities Not Currently Metered

Wastewater generation at Randolph is metered only for the Base as a whole; service to individual buildings is not metered. This is consistent with standard industrial practice, which is to base invoices for wastewater service on the water usage for each building. Given the high cost of implementing building-specific wastewater metering, individual metering of buildings for wastewater generation at Randolph AFB is not recommended. See Section 7.6.2 for a discussion of potential water metering requirements and costs.

TABLE 8.6.2-1 Estimated Wastewater Collection System Service Costs for Private Operator Randolph AFB USAF Utilities Privatization, Feasibility Analysis Report

Operation and Maintenance Cost

			Repair				
	System	Service	Crew	Truck	Backhoe		
Costs Available on Cost-per-Hour Basis	Operator	Coordinator	Foreman	Driver	Operator	Laborer 1	Laborer 2
Labor, Including Benefits at 15%	\$19.50	\$25.00	\$22.00	\$16.00	\$18.00	\$15.00	\$15.00
Incremental Direct Costs	3.08	3.08	3.08	3.08	3.08	3.08	3.08
Indirect Materials	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Vehicles	0.59	0.59	0.59	0.59	0.59		
Facilities	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Subtotal	\$23.64	\$29.14	\$26.14	\$20.14	\$22.14	\$18.55	\$18.55

Annual Labor Requirements (hours) Full Time (2080 hours) None required

			Repair				
	System	Service	Crew	Truck	Backhoe		
Part Time	Operator	Coordinator	Foreman	Driver	Operator	Laborer 1	Laborer 2
FTE	0.2	0.05	0.05	0.05	0.05	0.05	0.05
Annual Hours	416	104	104	104	104	104	104
Extended Labor Cost	\$9,834	\$12,122	\$2,719	\$2,095	\$2,303	\$1,929	\$1,929
Total	\$32,931						
Costs Available on Annual Cost Basis Direct Materials (\$)	22,245	,					
Total Operation and Maintenance Cost	\$55,176						
General and Administrative Costs (15%)	\$8,276	,					
Total Operating Cost	\$63,452						

8.6.3 Life-Cycle Cost Comparison

A life-cycle cost comparison of the status quo and the privatization alternative is shown in Table 8.6.3-1 and is summarized as follows:

	Present Value (\$)	Savings (\$)	Savings (%)
Air Force Adjusted Status Quo	5,467,575		
Privatized Utility Public Owner	4,407,417	1,060,158	19.4
Private Owner	5,275,702	191,873	3.5

As shown, the results of the preliminary economic analysis are that privatization of the Randolph AFB wastewater system would be economic for the Air Force. Privatization potentially represents savings of as much as \$1,060,158, or 19.4 percent.

These results are based on the present value of the status quo and privatized costs over a 25-year period. Cash flows for both the adjusted status quo and privatized cases were forecast based on cost analyses described above. The present value of costs is calculated by discounting the stream of annual costs at a 2.9 percent real discount rate. This is the 30-year real interest rate on treasury notes and bonds as specified in OMB Circular No. A-94 (February 1999).

The present value of privatized costs differs depending on whether the owner is a public or a private utility. This results from the different cost of capital associated with financing routine renewals and replacements. The basis for including these differences in the present value calculations is discussed in Section 1.3.

8.7 Wastewater System Conclusions

Privatization of the wastewater collection system at Randolph AFB is feasible, based on the findings of this report in the areas of market interest, operational impacts, the Texas regulatory environment, system conditions, and preliminary economics. The final feasibility of privatizing this system will not be known with certainty until the end of Phase III. At that time the actual bids from prospective system purchasers will be evaluated as part of the Air Force source selection process, and the final economic analysis will be certified. However, there is enough promise shown in the findings of this preliminary analysis to justify proceeding to Phase II of the Air Force privatization process.

TABLE 8.6.3-1

Wastewater Collection System

Life Cycle Cost Comparison of Status Quo vs. Privatization Alternatives

Randolph AFB

USAF Utilities Privatization Feasibility Analysis Report

	Present	Value	Estimated A	ctual (\$)	Forecast (\$)										
	(2001 do	ollars)	1998	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Air Force Status Quo Costs															
Operating Capital	2,490,	709	132,239		137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	
Remedies for Current Deficiencies	1,681,	275	1,617,403		1,681,275										
Routine Renewals and Replacements	1,295,	591	68,787		71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	
Total Air Force Costs	5,467,	575			1,890,238	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	
	Own	er													
Privatized Costs	Public	Private													
Net Utility Provider Costs to be Recovered in Rate															
Operating Capital	1,195,114	1,195,114	63,452		65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	
Remedies for Current Deficiencies	1,681,275	2.171.664	1,617,403		1,681,275	-	-	-	-	-	-	-	-	-	
Routine Renewals and Replacements	1,295,591	1,673,486			71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	
Air Force Management															
Air Force Program Oversight	235,437	235,437	12,500		12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	
Transition Costs	-	-			-										
Total Privatized Cost	4,407,417	5,275,702			1,831,729	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	
Savings (\$) Savings (%)	1,060,158 19.4%	191,873 3.5%			58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	

Notes

FTE= Full Time Equivalent

Assumptions:

, 100 a.i.i.p.1101.101	
From Mid-year 1998 to Mid-year 1999	0.80%
From Mid-year 1999 to Mid-year 2000	1.50%
From Mid-year 2000 to Mid-year 2001	1.60%
Private Cost of Capital (real, after tax)	5.00%
Federal/Public Cost of Capital (real)	2.90%
Implicit Financing Period (Years)	30
FTE for Privatization Oversight	0.25
Annual Cost per FTE	\$ 50,000

^{1.} Estimated actual costs in 1998 dollars; all other costs in 2001 dollars.

^{2.} All costs after both corporate and individual Federal income tax.

TABLE 8.6.3-1
Wastewater Collection System
Life Cycle Cost Comparison of Status Quo vs. Privatization Alternatives
Randolph AFB
USAF Utilities Privatization Feasibility Analysis Report

-															
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Air Force Status Quo Costs															
Operating Capital	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461	137,461
Remedies for Current Deficiencies Routine Renewals and Replacements	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503	71,503
Total Air Force Costs	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964	208,964
Privatized Costs															
Net Utility Provider Costs to be Recovered in Rate Operating Capital	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958	65,958
Remedies for Current Deficiencies Routine Renewals and Replacements	- 71,503														
Air Force Management Air Force Program Oversight (FAS) Transition Costs	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994	12,994
Total Privatized Cost	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454	150,454
Savings (\$) Savings (%)	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509	58,509

9.0 Marketing Strategy

RESERVED

10.0 Recommendations

As concluded in previous sections, privatization of the electric, natural gas, water, and wastewater utilities at Randolph AFB appears to be feasible. For the electric and gas systems, the preliminary economic analysis indicates marginal feasibility that depends on receipt of competitive bids. However, there is enough promise to warrant proceeding to Phase II of the privatization process.

Risks associated with operational impacts from privatization can be mitigated. There is sufficient market interest and regulatory conditions exist to allow the Air Force to conduct a competitive source selection for sale of each system. Procurement of utility services from each system's new owner is feasible; service area and franchise conditions can be managed. In addition, enough prospective purchasers are interested in multiple utilities at Randolph AFB, and at other bases included in the TRDP, to warrant bundling of utility systems within bases and among bases.

On the basis of these conclusions, the following recommendations are made:

- 1. Proceed to Phase II of the Air Force's three-phase utility privatization process for each of the four utility systems studied at Randolph AFB. Although the final feasibility of privatizing these systems will not be known with certainty until the end of Phase III, there is enough strength in the findings of this preliminary analysis to warrant proceeding with the process.
- 2. Conduct a competitive source selection for each of the four utility systems studied at Randolph AFB.
- 3. Offer each of the utility systems for sale as part of optional bid packages. In order to obtain the highest value for these systems and future utility service, each of these utility systems should be bundled in a number of optional bid packages as described in Section 9.
- 4. Finalize a list of mitigation measures that need to be implemented as part of privatization. As appropriate, include mitigation provisions as requirements for the new utility service provider.

Notify entities who submitted SOIs to inform them that, based in part on information they submitted, the Air Force is proceeding with plans to request formal proposals for purchase of the utility systems and provision of on-going utility service. Also issue a press release to advertise that RFPs will be forthcoming. This will help prepare interested parties to submit proposals once the they are formally requested.

11.0 References

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